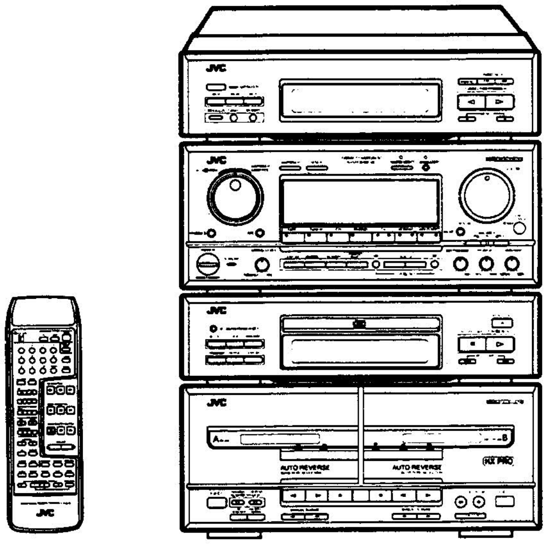
JVC

SERVICE MANUAL

COMPACT COMPONENT SYSTEM

DX-MX90BK



This service manual is mainly for Accessories list, Packing materials, Part numbers and Instruction book. About the disassembly procedure, adjustment procedure and so on, we issued another four service manuals for AX-MX90BK, FX-MX90BK, TD-MX90BK and XL-MX90BK, so please refer to them.

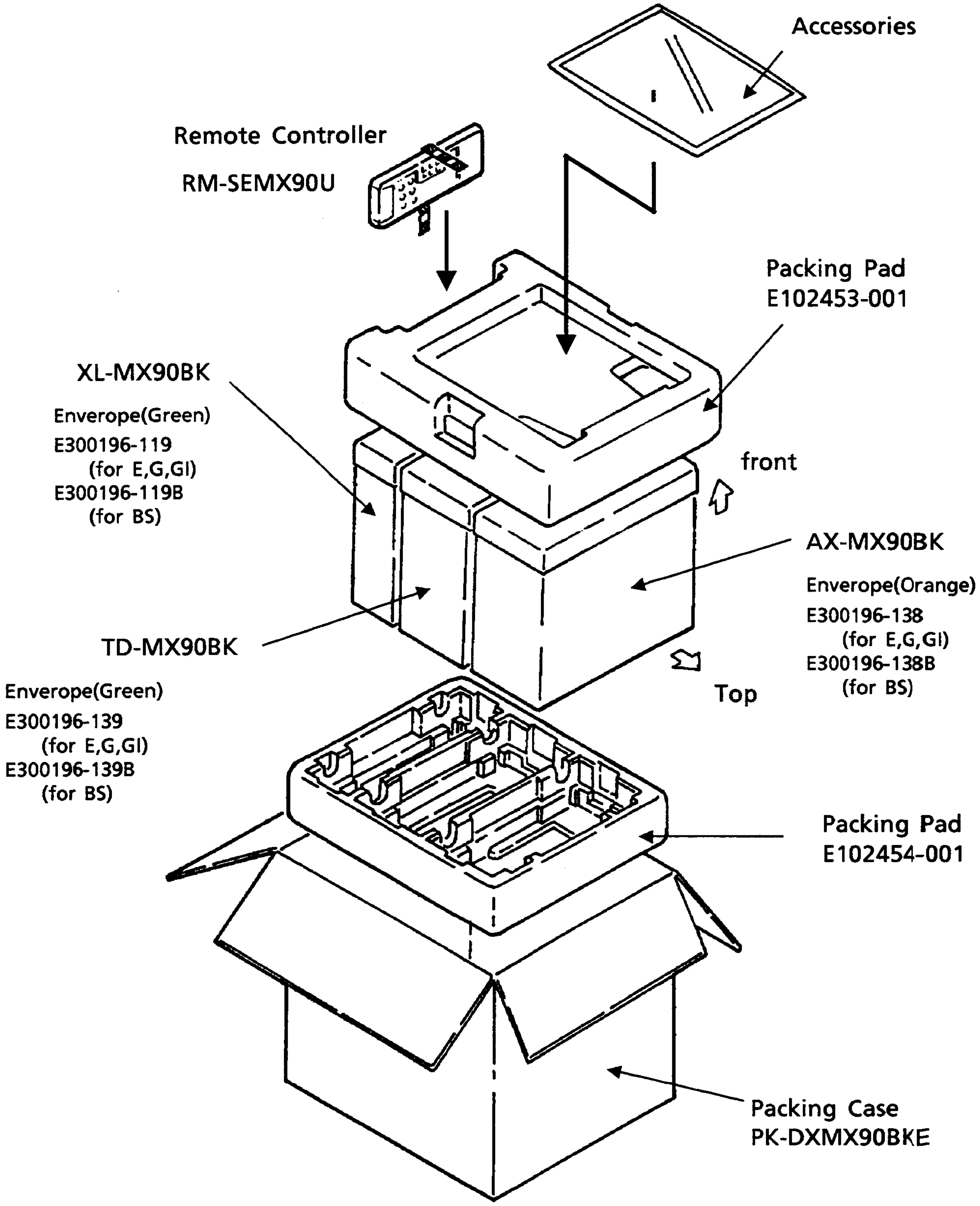
Component

Compact component system (DX-MX90BK) is a unit composing of the following units.

Model No.	Unit No.	Service manual No.
DX-MX90BK	AX-MX90BK (Amplifier)	20269
	TD-MX90BK (Tape Deck)	20270
	FX-MX90BK (Tuner)	20271
	XL-MX90BK (CD player)	20272

No. 20268
June 1991

Packing Materials and Part Numbers

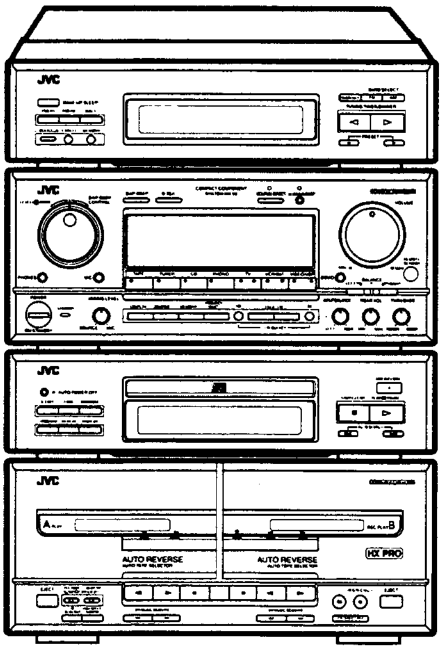

Accessories
Remote Controller
RM-SEMX90U
Packing Pad
E102453-001
XL-MX90BK
Enverope(Green)
E300196-119
(for E,G,GI)
E300196-119B
(for BS)
front
AX-MX90BK
Enverope(Orange)
E300196-138
(for E,G,GI)
E300196-138B
(for BS)
TD-MX90BK
Enverope(Green)
E300196-139
(for E,G,GI)
E300196-139B
(for BS)
Top
Packing Pad
E102454-001
Packing Case
PK-DXMX90BKE

Accessories List

⚠	Part Number	Part Name	qt.	Description	Areas
	E305805-1765A	Instruction Book	1		E,G
	E305805-1765ABS	Instruction Book	1		BS
	E305805-1766A	Instruction Book	1		GI
	QPGA025-03505B	Envelope	1	for Instruction Book	BS
	QPGA025-03505	Envelope	1	for Instruction Book	E,G,GI
	EWP502-005K	Built in Antenna	1		BS,E,G,GI
	E67007-001	Wire Antenna	1		G
	RM-SEMX90U	Remote Controller	1		BS,E,G,GI
	UM-4NJ-2P	Battery	2	for Remote Controller	BS,E,G,GI
	BT-20060	Warranty Card	1		BS
	BT-20117	Warranty Card	1		G
	BT20066A	EC Service Network	1		BS
	E43486-340A	Safety Instruction Sheet	1		BS
	QZL1008-001	FTZ Information Sheet	1		G
	EMZ2001-011	FM Antenna Adaptor	1		BS,E,GI
	EWP101-006	Speaker Cord Assembly	2		BS,E,G,GI
	EQB4001-015	AM Loop Antenna	1		BS,E,G,GI
	E43486-451	Caution Label	1		BS,E,G,GI

The marks for designated areas

BS --- the U.K.
E --- Continental Europe
G --- Germany
GI --- Italy



This system produces a full, powerful bass sound.

- **With JVC's newly developed forced air cooling system, Compact component system can produce the same high-quality bass sound as a large stereo system.**

Thank you for purchasing this JVC Compact Component Stereo System. We hope it will be valued addition to your home, giving you years of enjoyment.

Be sure to read this instruction manual carefully before operating your new stereo system. Here you will find all the information you need to set up and use the system.

For questions that cannot be answered in this manual, please contact your dealer.

About This manual

This instruction manual will help you with the following:

- Connecting the components of the system, installing the antennas, and connecting other components such as a turntable or VCR to the system.
- Learning the operations of the components of the system (Amplifier, CD Player. Tape Deck, Tuner and the Remote Controller).
- Learning additional functions of the system, such as using the timers, using the D. SEA parametric equalizer, DSEP (digital special effects processor), presetting broadcast stations in memory, and using the various recording capabilities.
- trouble-shooting, if a problem should occur.

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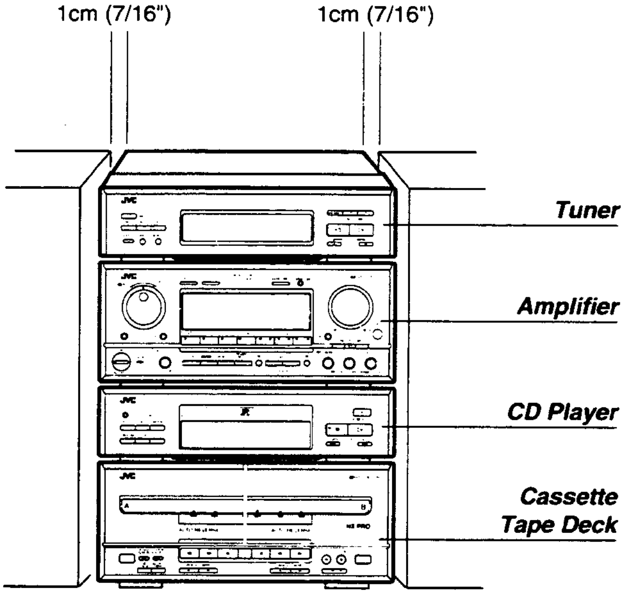
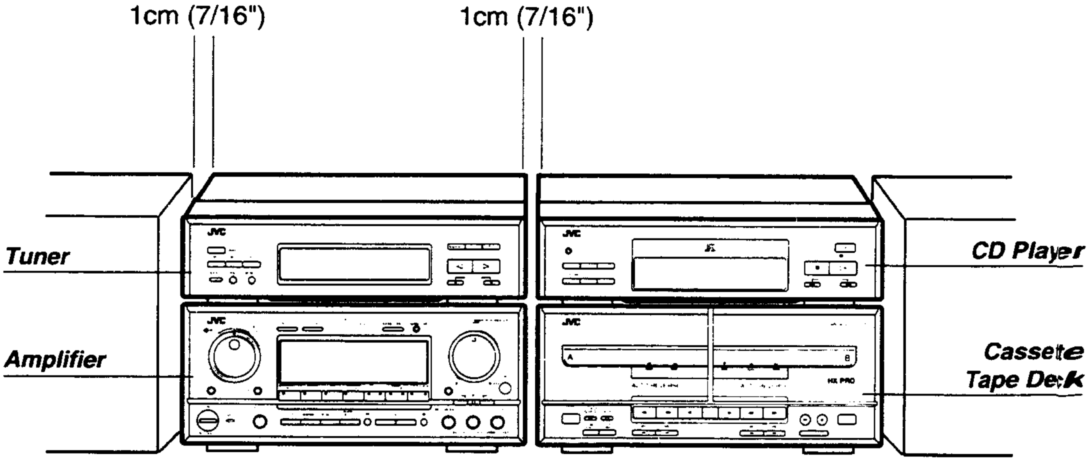
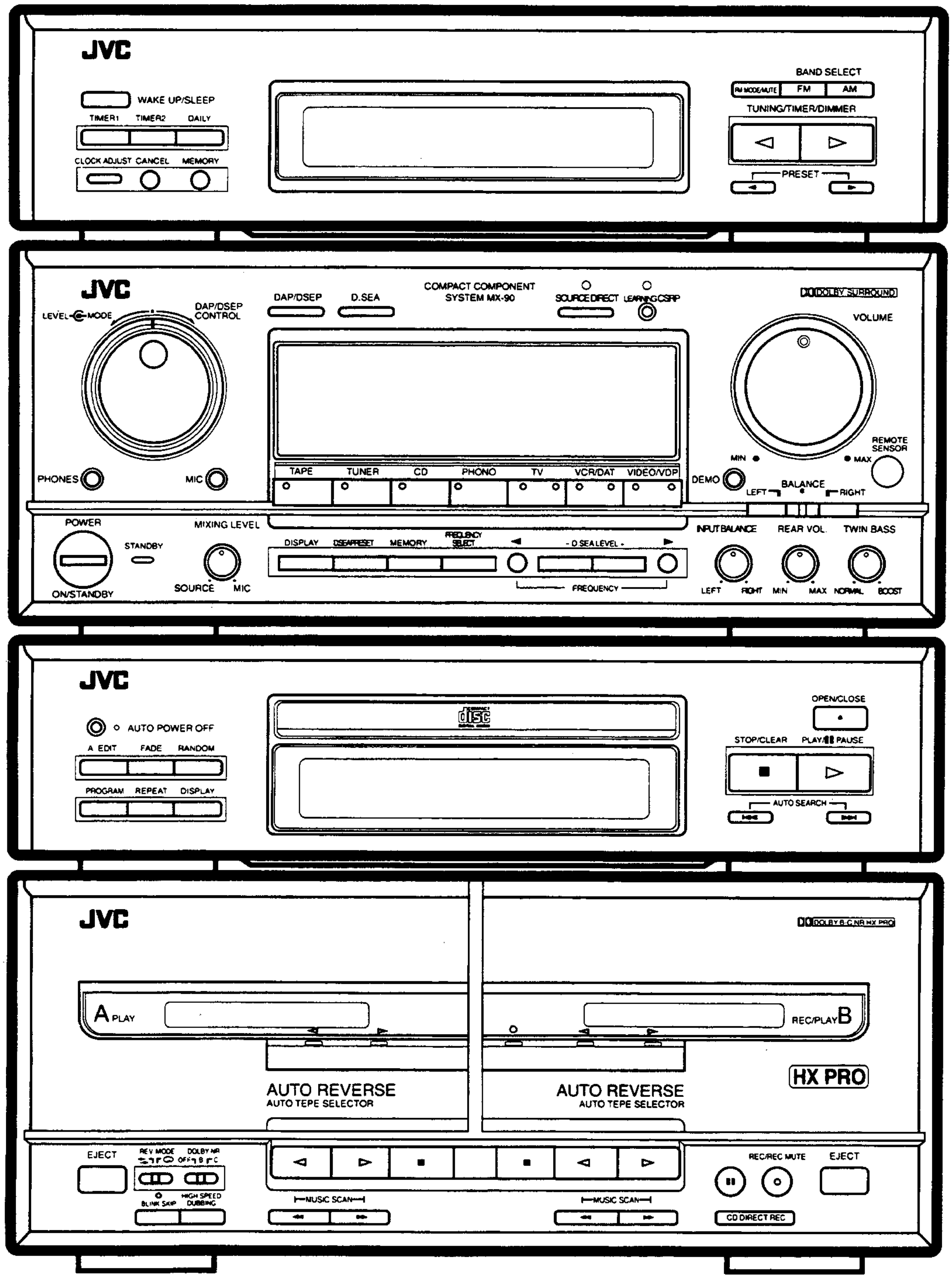
Laying Out the System

There are two ways to lay out the system as shown below.

- Leave a space of at least one cm on both sides of the amplifier and keep the back at least 10 cm from the wall for ventilation.


1cm (7/16")
1cm (7/16")
Tuner
Amplifier
CD Player
Cassette Tape Deck


1cm (7/16")
1cm (7/16")
Tuner
Amplifier
CD Player
Cassette Tape Deck


JVC
WAKE UP/SLEEP
TIMER1
TIMER2
DAILY
CLOCK ADJUST
CANCEL
MEMORY
BAND SELECT
FM MODE/MUTE
FM
AM
TUNING/TIMER/DIMMER
PRESET
JVC
LEVEL
MODE
DAP/DSEP CONTROL
DAP/DSEP
D.SEA
COMPACT COMPONENT SYSTEM MX-90
SOURCE DIRECT
LEARNING CSRP
DOLBY SURROUND
VOLUME
REMOTE SENSOR
MIN
MAX
PHONES
MIC
TAPE
TUNER
CD
PHONO
TV
VCR/DAT
VIDEO/VDP
DEMO
BALANCE
LEFT
RIGHT
POWER
STANDBY
ON/STANDBY
MIXING LEVEL
SOURCE
MIC
DISPLAY
DSEP PRESET
MEMORY
FREQUENCY SELECT
D.SEA LEVEL
FREQUENCY
INPUT BALANCE
REAR VOL.
TWIN BASS
LEFT
RIGHT
MIN
MAX
NORMAL
BOOST
JVC
AUTO POWER OFF
A EDIT
FADE
RANDOM
PROGRAM
REPEAT
DISPLAY
OPEN/CLOSE
STOP/CLEAR
PLAY/II PAUSE
AUTO SEARCH
JVC
DOLBY B·C NR HX PRO
A PLAY
REC/PLAY B
AUTO REVERSE
AUTO TEPE SELECTOR
AUTO REVERSE
AUTO TEPE SELECTOR
HX PRO
EJECT
REV MODE
DOLBY NR
OFF B C
BLINK SKIP
HIGH SPEED DUBBING
MUSIC SCAN
MUSIC SCAN
REC/REC MUTE
EJECT
CD DIRECT REC

Tuner

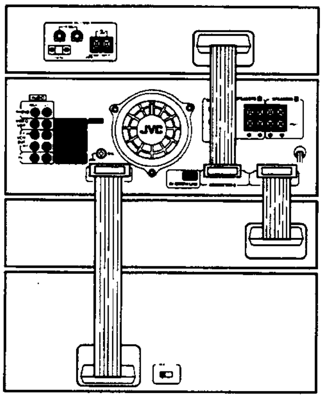
Amplifier

CD Player

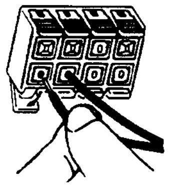
Cassette Tape Deck

Getting started

Connecting the System Components



❶



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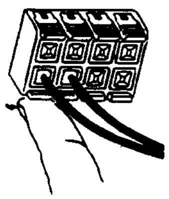
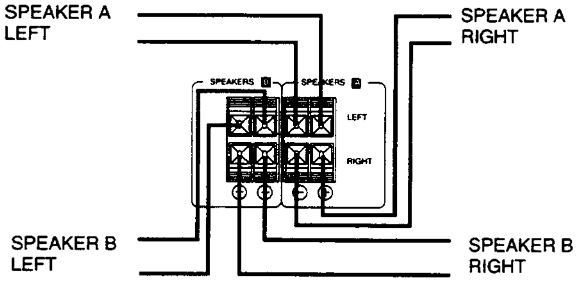
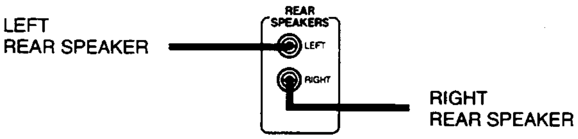



SPEAKER A
LEFT
SPEAKER A
RIGHT
SPEAKERS B
SPEAKERS A
LEFT
RIGHT
SPEAKER B
LEFT
SPEAKER B
RIGHT


LEFT
REAR SPEAKER
REAR
SPEAKERS
LEFT
RIGHT
RIGHT
REAR SPEAKER

Connection Notes

- Before you plug in the system, you must make all the necessary connections.

Connecting the Four stereo Components

- Connecting the Tuner, Amplifier, CD Player, and Tape Deck.

Connect three ribbon cables extending from the tuner, CD player, and tape deck to the amplifier.

- If the system does not work well or needs repairing, please take all the components with you the nearest agent.

Connecting the Speakers

Speaker Terminals

❶ When connecting speakers, open each terminal and insert the end of the speaker wire as shown.

❷ Close the terminals as shown to clamp the speaker wires in place.

SPEAKERS A

Connect the High Range Speakers to the SPEAKERS A terminals on the amplifier.

SPEAKERS B

Connect the Subwoofers to the SPEAKERS B terminals on the amplifier.

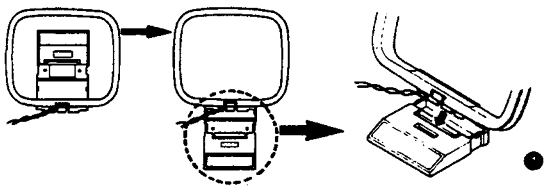
REAR SPEAKERS

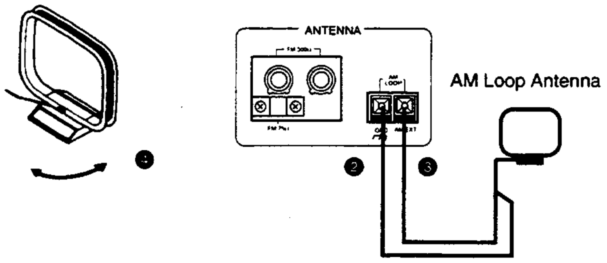
Connect the REAR SPEAKERS terminals of the amplifier to the rear speakers.

Note:
- Connect speaker cables to terminals matching cable colors with terminal lever colors.

AM and FM Antenna Connections

To receive radio broadcasts, you will have to connect AM and FM antennas to the Tuner.
An AM loop antenna is included with your system.
FM antennas use two type of cable connections: 75-ohm cables have a round coaxial connection while 300-ohm cables have a flat connection.

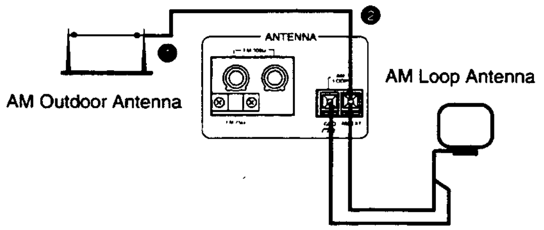




AM Loop Antenna

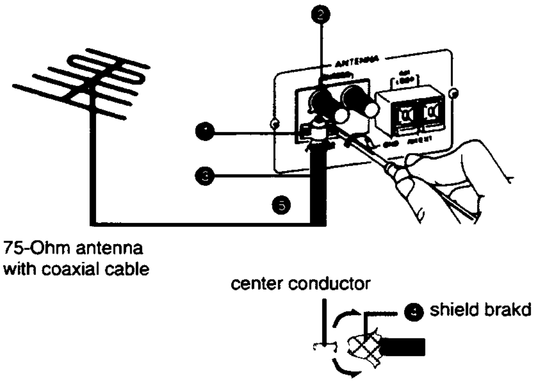
❶ Fold out the loop from the antenna base.
❷ Connect one antenna wire to one of the AM LOOP terminals.
❸ Connect the remaining antenna wire to the other AM LOOP terminal.
Note:
- These two terminals open and close the same way as the speaker terminals.

❹ Adjust the loop antenna as needed to get the best reception.



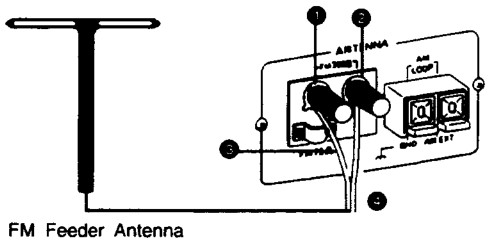
AM Outdoor Antenna

If your AM broadcast reception is unsatisfactory, you should connect an AM outdoor antenna in addition to the loop antenna.
Important! The AM loop antenna must be installed to receive AM broadcasts. Do not disconnect the loop antenna when installing an outdoor antenna.
❶ Install a single vinyl-covered antenna wire outdoors. The antenna wire should be about 16 to 40 feet (5 to 12 meters) long.
❷ Connect one end of the antenna to the AM loop terminal marked AM EXT.
Note:
- Except for the connection, make sure no uninsulated antenna wire touches the rear panel. Otherwise, you might not receive AM broadcasts.



FM 75-ohm Antenna Cable

❶ Loosen the screws holding the bracket.
❷ Loosen the cap of the 300/75-ohm terminal.
❸ Insert the round antenna cable through the bracket from below.
❹ Make sure the shield braid on the cable contacts the bracket, and that the center conductor of the cable contacts the 300/75-ohm terminal.
❺ Tighten the bracket screws and the cap on the 300/75-ohm terminal.

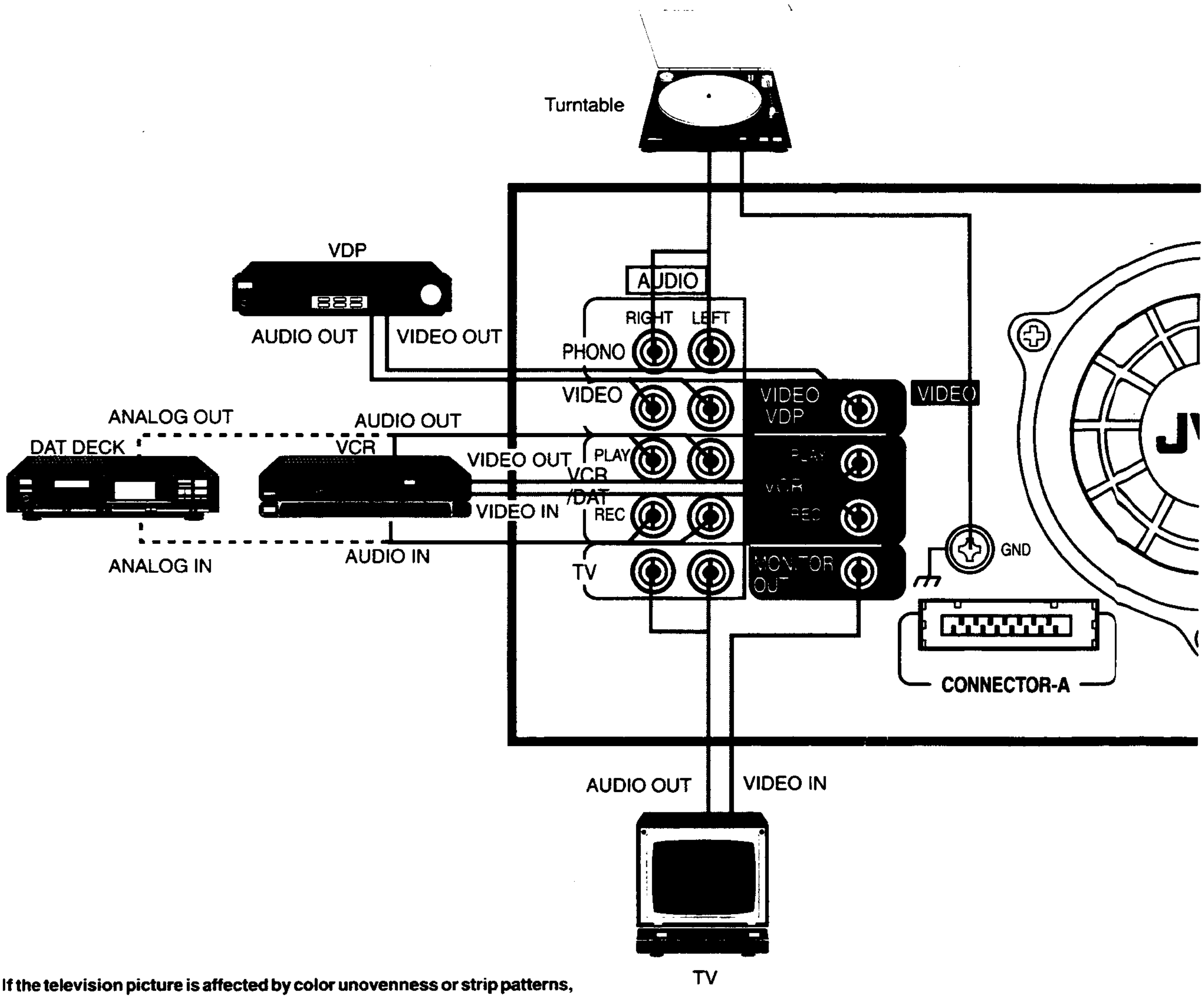


FM 300-Ohm Antenna Cable

❶ Loosen the cap on the 300/75-ohm terminal.
❷ Loosen the cap on the 300-ohm terminal.
❸ Connect the two conductors of the antenna cable to the 300/75-ohm terminals and the 300-ohm terminal.
❹ Tighten the caps on both terminals.
Note:
- Whether you use the 75-ohm or 300-ohm cable, make sure the antenna conductors do not touch any other terminals on the rear panel. This could cause poor reception.

Connecting Other Components

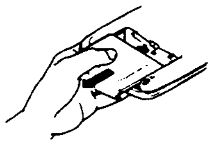
The amplifier can also be connected to a Turntable (PHONO), a Video Cassette Recorder (VCR), a Digital Audio Tape (DAT) Deck, Television (TV) and Video Disc Player (VDP).

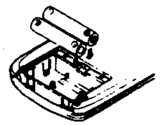

Turntable
VDP
AUDIO OUT
VIDEO OUT
ANALOG OUT
DAT DECK
AUDIO OUT
VCR
VIDEO OUT
VIDEO IN
ANALOG IN
AUDIO IN
AUDIO
RIGHT
LEFT
PHONO
VIDEO
PLAY
VCR
/DAT
REC
TV
VIDEO
VDP
PLAY
VCR
REC
MONITOR
OUT
VIDEO
GND
CONNECTOR-A
AUDIO OUT
VIDEO IN
TV

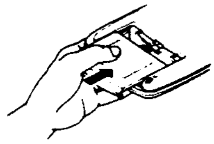
If the television picture is affected by color unovenness or strip patterns, and the sound is noisy, do the following:

1. Move the television away from the system.
2. Take up any slack in the power, antenna, and connecting cords.

Installing Batteries in the Remote Controller





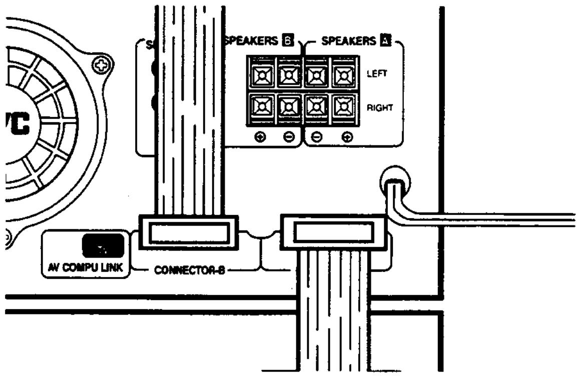


1. **Remove the battery compartment lid.**
   Press the lid and slide it in the direction of the arrow.
2. **Insert the batteries.**
   Use two UM-4/AAA/R03 size batteries.
   Make sure the + and - polarities on the batteries and compartment are the same.
3. **Attach the lid.**
   Press the lid and slide it in the direction of the arrow.

Note:

- Batteries installed incorrectly may burst or leak. Pay attention to the following:
  - When the Remote Controller is not in use for a long period of time, remove the batteries.
  - Do not mix old and new batteries.
  - Do not mix batteries of different types, even if their shapes are the same.
  - When batteries become weak, the operating distance of the Remote Controller is greatly reduced and you will need to replace the batteries.

AC power Connection



Plug the power cord on the back of the amplifier into a household electrical outlet.

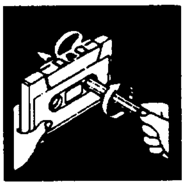
Caution: To prevent electric shock, turn all stereo components off before you install or remove power cords.

Important! Before you plug the power cord into an outlet, make sure all stereo components are connected correctly.

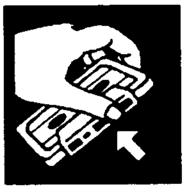
Care and Handling

You must handle your compact disks, cassette tapes, and tape deck carefully to keep them for a long time.

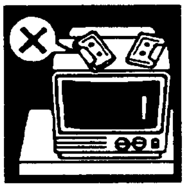
Cassette Tape



- If the tape is loose in the cassette, take up the slack by inserting a pencil in one of the reels and rotating.
  If the tape is loose, it may get stretched, cut, or caught in the cassette.



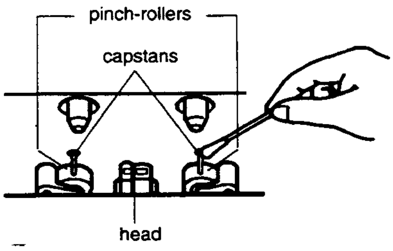
- Do not touch the tape surface.



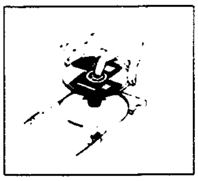
- Do not store the tape:
  — In dusty places
  — In direct sunlight or heat
  — In moist areas
  — On a TV or speaker
  — Near a magnet

Tape Deck

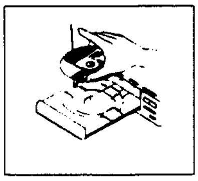
- If the head, capstans, and pinch-rollers of the tape deck become dirty, the following will occur:
  - — Impaired sound quality
  - — Discontinuous sound
  - — Fading
  - — Incomplete erasure
  - — Impossible to record
- Clean the head, capstans, and pinch-rollers with a cotton swab moistened with alcohol.



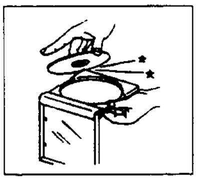
Compact Discs



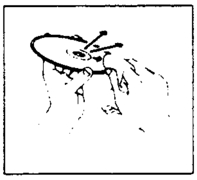
- Remove the CD from the case by holding it at the edges while pressing the center hole lightly.
- Do not touch the shiny surface of the CD, or bend the CD.



- Place the CD in the tray with the label up.



- Put the CD back in its case after use to prevent warping.
- Be careful not to scratch the surface of the CD when placing it back in the case.
- Avoid exposure to direct sunlight, temperature extremes, and moisture.



- If the CD becomes dirty, wipe it with a soft dry cloth in a straight line from center to edge.

Caution! Do not use any solvent (for example, conventional record cleaner, spray, thinner, benzine, etc.)

Only use compact-discs bearing the mark shown below.

COMPACT
disc
DIGITAL AUDIO

Important Notes

1. **Installation**
- Select a place which is level, dry, and neither too hot not too cold (between 5 and 36 degrees Celsius/41 and 95 degrees Fahrenheit).
- Be sure there is adequate ventilation; poor ventilation may cause the unit to malfunction.
- Leave sufficient distance between the receiver and your TV.

2. **Power**
- Do not handle the power cord with wet hands!
- When unplugging from the wall outlet, always pull the plug, not the power cord.

3. **Malfunctions, etc.**
- Do not insert any metallic objects into the receiver.

Using the Amplifier

Using the Power Switch

1. **Press the POWER switch to turn on the stereo system.**
   When the POWER switch is not pressed and the power cord is plugged in, the stereo is in STANDBY mode and STANDBY indicator lights. In STANDBY mode, the stereo uses a small amount of power (23 watts) for the clock, memory contents, and any timers which are set.

2. **To disconnect power completely, unplug the power cord.**

Adjusting the Volume Controls

Volume
Turn the VOLUME knob to adjust the volume level of the speakers or headphones.

- Connect headphones to the PHONES jack on the amplifier for listening through headphones. No sound will be produced from the speakers.
- Turn the MIXING LEVEL knob to the SOURCE position unless a microphone is used.

Balance
Turn the BALANCE knob to adjust the left-and-right sound balance in the speakers or headphones.

Twin Bass
Turn the TWIN BASS knob to adjust the output level of the Subwoofers. Turning this control toward MAX will boost the low frequencies.

REAR VOL.
Adjust the volume of the rear speakers.

SOURCE DIRECT
Bypass the D.SEA circuit and the DAP/DSEP circuit to reproduce music as it was recorded.

Note:
- When the SOURCE DIRECT SWITCH is turned off, the PHONO level drops by 6 dB, but this is not a fault.

DEMO
You can use DAP/DSEP mode and D. SEA mode to create various kinds of sound.
- As the display changes, the sound varies.
  Try using DEMO while listening to music.

Using D.SEA Function

You can think of the D.SEA function as an enhanced version of the conventional Bass and Treble knobs on most sound systems. Use it to alter the tone of the source (for example, CD, tape, or broadcast) by increasing or decreasing the levels of selected frequency ranges.

By making certain frequency ranges louder or softer, you can change the sound to suit your taste. You can also choose from six pre-programmed D.SEA settings.

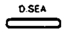
Using a D.SEA Pattern

You can use the D.SEA pattern you created, or one of the six pre-programmed D.SEA patterns, each of which has its own sound characteristics.

The pre-programmed D.SEA patterns are:

ROCK	Boosted low and high frequencies.
JAZZ	Gives a feeling of a live atmosphere. Good for acoustic music.
POPS	Good for vocal music.
CLASSIC	Set for wide and dynamic sound stereo systems.
H.PHONE	When creating tapes for headphone use.
CAR	When creating tapes for use in a car stereo.

1. **Press the D.SEA button on the Amplifier.**



2. **Press the D.SEA PRESET button to select a D.SEA Pattern.**

D.SEA PRESET

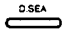
Each press of the D.SEA PRESET button changes the pattern displayed in the following order:

→ROCK→JAZZ→POPS→CLASSIC→H.PHONE→CAR
→MANUAL (your pattern)→(back to the beginning)

Controlling Sound with the D.SEA Function

The MX-90BK digital parametric equalizer (D. SEA) can set three frequency points ranging from 63 Hz to 16 kHz.

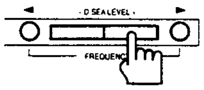
1. **Press the D.SEA button on the Amplifier.**



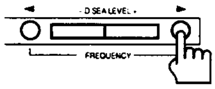
2. **Press FREQUENCY SELECT button on the amplifier to select a setting point.**

FREQUENCY SELECT

3. **Adjust the level with D. SEA LEVEL +, – on the amplifier.**



4. **Move the point left or right (bass or treble) to select the desired frequency.**



5. **Repeat steps 2 to 4, above, to set up to three frequency points.**

6. **Press the MEMORY button on the Amplifier to store your D.SEA pattern in memory.**

Changing the D.SEA Display

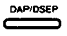
Five display modes (PEAK HOLD, PEAK LINE, SHOWER, MOUTH, TWIN) are available. Every time the DISPLAY button is pressed, the display mode changes in the following order:

→PEAK HOLD→PEAK LINE→SHOWER→MOUTH
→TWIN→(back to the beginning)

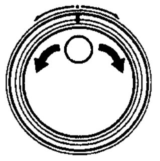
PROCESSOR

The processor can be used in three modes: DAP (digital acoustic processor), for reproducing a concert hall sound, DSEP (digital special effects processor) for generating sound effects, and Dolby Surround, for producing the feeling in movie theater.

1. **Press the DAP/DSEP button.**

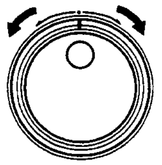


2. **Turn the jog dial (inner) to select the mode.**



→DOLBY SURROUND→DAP "D.CLUB"→"LIVE"→"CATHEDRAL"
→"CHURCH"→"HALL"→DSEP "SCRATCH"→"PITCH"→"FLANGER"
→(back to the beginning)

3. **Turn the shuttle ring (outer) to change the level of the effect.**
   The display shows LEVEL.



Note:

- "Although the DAP and DSEP modes can be enjoyed with only front speakers, if rear speakers are used as well, the result is much more impressive.
  In the DOLBY SURROUND mode, no effect is produced without the rear speakers. (For the connections, see page 6.)
  Even if SOURCE DIRECT is selected, the rear speakers output sound.

DOLBY SURROUND

1. **Press the DAP/DSEP button.**

2. **Turn the jog dial (inner) to select DOLBY SURROUND mode.**
   In this mode, videodisc and prerecorded videocassettes with DOLBY SURROUND sound can be reproduced.

3. **Adjust the volume of the rear speakers with REAR VOL.**
   Set REAR VOL to the center position so sound from the rear speakers cannot be heard clearly.

REAR VOL
MIN
MAX

To obtain the maximum DOLBY SURROUND effect, adjust the following;

1. **Turn the shuttle ring to adjust the delay time.**

When the rear speakers are slightly farther away than the front speakers	15 ms
When the rear speakers are more or less as far away as the front speakers	20 ms
When the rear speakers are a little closer than the front speakers	25 ms
When the rear speakers are much closer than the front speakers	30 ms

2. **Adjust the input balance with INPUT BALANCE on the amplifier.**
   Turn INPUT BALANCE counterclockwise and clockwise so that sound (for instance, the speech of characters on your TV screen) comes from the front center position rather than from the rear speakers.

INPUT BALANCE
LEFT
RIGHT

Using the DAP Function

1. **Press the DAP/DSEP button.**

2. **Turn the jog dial (inner) to select the desired mode.**
   The selected sound field can be used for any source.

D. CLUB	Sound field of disco LIVE Sound field of club venue with low ceiling
LIVE	Sound field of low-ceilinged live venue.
CATHEDRAL	Sound field of domed stadium with high roof
CHURCH	Sound field of stone church with pronounced echo
HALL	Sound field of vocal recital hall. Suitable for microphone mixing

3. **Adjust the volume of the rear speakers with REAR VOL.**
   Set REAR VOL to the center position so that the sound from the rear speakers cannot be heard clearly.

- Turn the shuttle ring to vary the DAP level.
  To increase the DAP level, turn the shuttle ring clockwise: to decrease the level, turn the ring counterclockwise.

Using the DSEP Function

1. **Press the DAP/DSEP button.**

2. **Turn the jog dial (inner) to select the desired mode.**

SCRATCH	Repeatedly reproduce the same portion. When the shuttle ring is turned, the rear speakers output sound.
PITCH	The musical interval of sound can be changed. The rear speakers do not output sound.
FLANGER	The sound is cyclically undulated along with a jet plane sound.

3. **Turn the shuttle ring to create a sound.**
   For SCRATCH and PITCH, an effect is only obtained when the shuttle ring is turned.

SCRATCH

- If you turn the shuttle ring counterclockwise, the scratch speed is reduced and the pitch falls. If you turn the ring clockwise the scratch speed increaces and the pitch rises. When you release the shuttle ring, the sound returns to normal.

PICTH

- When the shuttle ring is turned counterclockwise, the musical interval decrease. When the shuttle ring is released, it return to its original position, while the effect is maintained. When the shuttle ring is turned clockwise, the original sound is restored.
- When the shuttle ring is turned clockwise, the musical interval increase. When the shuttle ring is released, it returns to its original position, while the effect is maintained. When the shuttle ring is turned counterclockwise, the original sound is restored.

FLANGER

- When the shuttle ring is turned counterclockwise, the undulation slow down. When the shuttle ring is released, it returns to its original position, while the effect is maintained.
- When the shuttle ring is turned clockwise, the undulation speeds up. When the shuttle ring is released, it returns to its original position, while the effect is maintained.

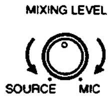
Mixing the Microphone Sound

You can sing or narrate to the music with the optionally available microphone connected to the MIC jack.

1. **Connect the microphone.**
- Set MIXING LEVEL knob to SOURCE before connecting or disconnecting the microphone.

2. **Play your desired source.**

3. **Adjust the volume balance between the music and microphone using the MIXING LEVEL knob.**


MIXING LEVEL
SOURCE
MIC

The music volume increases.

The microphone volume increases.

Note:
- Raising the MIXING LEVEL too high may cause howling.
- Do not hold the microphone toward the speaker or move it away from the speaker.
- Lower the microphone level with the MIXING LEVEL knob.
- Lower the volume level with the VOLUME knob.

- When the microphone is no in use, set the MIXING LEVEL knob to SOURCE.

Using Turntable, VCR, DAT, TV and VDP

In addition to the CD Player, Tuner, and Cassette Tape Deck, the amplifier can also play a Turntable, a VCR, a DAT, a TV and a VDP.

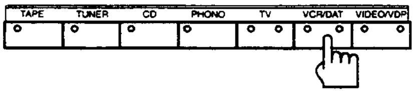
1. **To play records, press the PHONO button on the Amplifier.**
   To play VCR, or DAT, press the VCR/DAT button on the Amplifier.
   To play TV press the TV button on the Amplifier.
   To play VIDEO or VDP press the VIDEO/VDP button on the Amplifier.

2. **To operate the each component, refer to its instruction manual.**
- You can operate a JVC VCR using the remote controller.

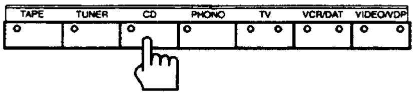
When a VCR is connected, the sound is heard through the speakers.

Mixing Audio and Video

1. **Select a video source (TV, VCR/DAT, VIDEO/VDP).**
   The right-hand indicator shows the selected video source.


TAPE
TUNER
CD
PHONO
TV
VCR/DAT
VIDEO/VDP

2. **Select an audio source (TAPE, TUNER, CD, PHONO).**
   The left-hand indicator shows the selected audio source.


TAPE
TUNER
CD
PHONO
TV
VCR/DAT
VIDEO/VDP

Using the LEARNING CSRP Feature

The LEARNING CSRP (Compu-link Source Related Preset system) is the state-of-art electronic feature that learns VOLUME and other control settings on each source. This was previously done automatically each time a difference source was played back or each time the system was turned off. It remembers the last five settings of each parameter you has set and automatically recalls the most frequently used ones.

This feature lets you invoke your favorite control settings by simply selecting a source (TAPE, TUNER, CD, PHONO, TV, VCR/DAT, VIDEO/VDP) without repeating many settings each time sources are changed.

When the LEARNING CSRP button is set to ON, the following parameters are learned each time a difference source was played back or the system was turned off.

- Volume level
- D.SEA settings (Preset Pattern and display mode)
- DAP/DSEP setting (Mode)

They will be set based on the last five settings.

- D.SEA ON/OFF
- DAP/DSEP ON/OFF

They will be set the last setting.

Press the LEARNING CSRP button

LEARNING CSRP

The indicator light will go on.

— When sources are switched, the VOLUME level, D.SEA, and DAP/DSEP are automatically set.
— When turning the POWER off, the VOLUME control automatically turns toward MIN.
— When turning the POWER on again, the VOLUME control automatically turns up to the position set by the LEARNING CSRP function.

Using the Loudness Function

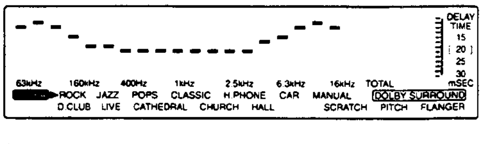
When LEARNING CSRP in on, the loudness function boosts low-frequency sounds to compensate for the ear's lack of sensitivity to these sounds at low volume.

1. **Press the D.SEA button to turn the D.SEA on.**

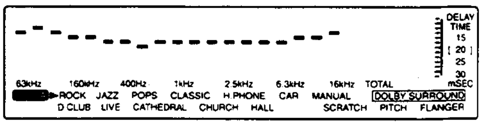
2. **Press the D.SEA PRESET button to select a preset pattern other than MANUAL.**

3. **Press the LEARNING CSRP button,**
   The indicator light will go on.

- If the volume level is lowered:
  Low and high frequencies are boosted to make the sound powerful and distinct.


DELAY TIME
15
[20]
25
30
mSEC
63kHz
160kHz
400Hz
1kHz
2.5kHz
6.3kHz
16kHz
TOTAL
ROCK
JAZZ
POPS
CLASSIC
H.PHONE
CAR
MANUAL
DOLBY SURROUND
D.CLUB
LIVE
CATHEDRAL
CHURCH
HALL
SCRATCH
PITCH
FLANGER

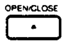
- If the volume level is raised:
  The D.SEA setting becomes similar to the preset pattern and the sound becomes natural.


DELAY TIME
15
[20]
25
30
mSEC
63kHz
160kHz
400Hz
1kHz
2.5kHz
6.3kHz
16kHz
TOTAL
ROCK
JAZZ
POPS
CLASSIC
H.PHONE
CAR
MANUAL
DOLBY SURROUND
D.CLUB
LIVE
CATHEDRAL
CHURCH
HALL
SCRATCH
PITCH
FLANGER

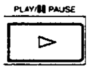
Using the CD Player

Starting Playback

1. **Press the OPEN/CLOSE button on the CD Player.**
   The CD tray slides out.

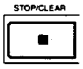


2. **Place a CD (with a label facing up) in the tray, and press the OPEN/CLOSE button again.**
   The tray slides back in.
3. **Press the PLAY/PAUSE button on the CD Player, or the CD button on the Amplifier.**
   The CD Player begins playing the first track on the CD.



Stopping Playback and Ejecting the CD

1. **Press the STOP/CLEAR button.**



2. **Press the OPEN/CLOSE button, and take the CD out of the tray.**
3. **Press the OPEN/CLOSE button again to close the tray.**

Stopping and Restarting Playback

1. **Press the PLAY/PAUSE button.**
   Playback stops temporarily.
2. **Press the PLAY/PAUSE button again.**
   Playback restarts.

Note:
- When Tuner is selected as the source, Cd OFF is displayed, and only the OPEN/CLOSE disc tray and PLAY/PAUSE buttons can be used. To use other buttons, press the CD button on the Amplifier or the PLAY/PAUSE button on the CD Player first.

Selecting a Track to Play

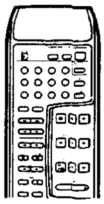
Press the SEARCH buttons on the CD player to scan through the track numbers.

Press the ⏮ button to find tracks with decreasing numbers, and the ⏭ button to find tracks with increasing numbers.

- If you press the SEARCH buttons when the CD Player is in the pause/stop mode, you will find the track you selected.
  You can restart playback by pressing the PLAY/PAUSE button.
- If you press the SEARCH button continuously during playback, the CD will advance rapidly in the direction of the button.

Using the Remote Controller to Select a Track

There are three ways to search for a track with the remote controller:



Numeric keypad

AUTO SEARCH buttons ⏮ or ⏭

MANUAL SEARCH buttons ◀◀ or ▶▶

Using the Numeric Keypad

1. **Press the CD 10KEY button on the Remote Controller.**
2. **Enter the track's number with the numeric keys.**

- If the track you want to hear is the 8th track, press the 8 key.
- If the track you want to hear is the 15th track, press the +10 key and the 5 key.
- If the track you want to hear is the 20th track, press the +10 key and the 10 key.

Using the Auto Search Buttons

Press the Auto Search ⏮ or ⏭ button on the Remote Controller to scan through the track numbers.

Using the Manual Search Buttons

Press the Manual Search ◀◀ or ▶▶ button on the Remote Controller to search for a certain part of the track.

Listening Repeatedly

Using the REPEAT button, you can play the entire CD or a selected track repeatedly.

Playing the Entire CD Repeatedly

- During playback, press the REPEAT button once.

REPEAT

The CD will play through the last track and then start over again. It will keep repeating until you cancel the repetition.

Playing a Selected Track Repeatedly

- During playback, press the REPEAT button twice.

REPEAT 1

The current track will play to the end and then start over again. It will keep repeating until you cancel the repetition.

Cancelling Repetition

Press the REPEAT button again.
Each track will play to the end and not repeat.

Displaying the Elapsed and Remaining Playing Time

Using the DISPLAY button, you can display the total time the CD (or current track) has been playing, and the amount of time that remains. This is useful in situations such as recording, when you need to know how long the track or CD has been playing, or the amount of time that remains on the track or CD.

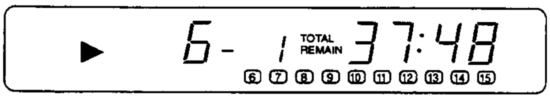
Press the DISPLAY button to show the time you want.

There are four display times:

EACH	The total elapsed playing time since the beginning of playback of the current track
EACH REMAIN	The time remaining until the end of the current track
TOTAL	The total elapsed playing time since the beginning of playback of the CD
TOTAL REMAIN	The time remaining until the end of the CD

The display changes each time you press the DISPLAY button.

For Example:



Display mode:	TOTAL REMAIN
Current track:	6th
Total remaining time:	37 minutes 48 seconds

Programming Your Own Playback Sequence

You can program the CD Player to play back the tracks of a CD in any order.

1. **Press the STOP/CLEAR button on the CD Player.**
   This puts the CD Player in STOP mode and clears existing programs from the memory.

2. **Press the PROGRAM button on the CD Player or the PRGM button on the Remote Controller.**

PROGRAM
PRGM

3. **Press the CD 10KEY button on the Remote Controller.**

4. **Enter the track numbers with the numeric keys in the order you want them played back.**

- You can program up to 32 tracks.

  If the total time of all the programmed tracks is 100 minutes or more, the display will show " -- : -- " (since the highest time the display can show is "99:59").

5. **Press the PLAY/PAUSE button on the CD Player, or the CD CONTROL ⊳ button on the Remote Controller.**
   Playback begins with the first track in the program.

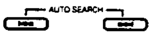
6. **To add a track to the program during playback, enter the track number with the numeric keys on the Remote Controller.**
   The new track is added to the end of the program.

Checking the Program

You can check the programmed sequence of playback to determine which tracks will be played in which order.

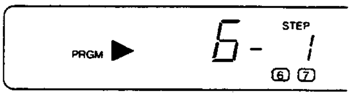
Note:
- The program contents cannot be displayed during playback. Press the STOP/CLEAR button if the CD Player is in play mode.

1. **Press the AUTO SEARCH button once.**



The first track in the program is displayed, along with its sequence number.

For example:



This display shows that the 6th track will be played first.

2. **Press the SEARCH button repeatedly.**
   The rest of the tracks in the program are displayed, along with their sequence numbers.

Listening to Programmed Tracks Repeatedly

1. **Press the REPEAT button to listen to the programmed sequence of playback repeatedly.**

2. **Then press the PLAY/PAUSE button.**

Updating the Program

You can add and delete tracks from the program.

Adding Tracks to the Program

1. **Press the CD 10KEY button on the Remote Controller.**

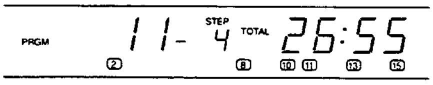
2. **Enter the track numbers with the numeric keys in the order you want them played back.**
   The track numbers you enter are added to the end of the program.

Deleting Tracks from the Program

Note:
- The program contents cannot be deleted during playback. Press the STOP/CLEAR button if the CD Player is in play mode.

1. **Press the SEARCH buttons to select the track to be deleted from the program.**

For example:



This display shows that the 11th track is selected to be deleted.

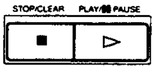
2. **Press the CANCEL button on the Remote Controller.**

- The track being displayed will be deleted.

Updating the Entire Program

You can replace the old program with a new one.

1. **Press the STOP/CLEAR button on the CD Player.**



This clears the programmed sequence of playback from memory.

To clear the program during playback:

- Press the STOP/CLEAR button twice (once to stop, twice to clear the program from memory).

2. **Press the PROGRAM button on the CD Player or the PRGM button on the Remote Controller.**
3. **Press the CD 10KEY button the Remote Controller.**
   Pressing the CD 10KEY button puts the numeric keys in CD mode.
4. **Enter the track numbers with the numeric keys in the order you want them played back.**

Cancelling Programmed Playback

1. **Press the PROGRAM button.**

This puts the CD Player in normal playback mode. The tracks will play back in their regular order.

Playing Tracks at Random

In RANDOM mode, the CD player selects and plays tracks at random.

1. **Press the RANDOM button on the CD player.**
   CD player starts playing tracks at random.

2. **To cancel random playback, press the STOP/CLEAR button.**

- When all tracks in the disc are played once, the random playback ends.
- If you set the CD player to the REPEAT mode by pressing the REPEAT button, even after all tracks have been played once, the CD player will again select and play at random to continue the random playback.

Using the AUTO POWER OFF Function

The power can be automatically turned off when the CD playback is completed.

1. **Press the AUTO POWER OFF button on the CD player.**
   The indicator light will go on.

AUTO POWER OFF

2. **Press the PLAY/PAUSE button on the CD player or the CD CONTROL button on the Remote Controller.**
   The power goes off automatically when the CD playback is complete.

Using the Tape Deck

The tape deck has an Auto Tape Select feature, which can tell the difference between various types of cassette tape. It can distinguish between Normal (Type), CrO_2 — High Position (Type II), and Metal (Type IV).

Playing a Tape

1. **Press the EJECT button to open the cassette holder.**
2. **Insert a cassette and shut the cassette holder.**
3. **If the tape was recorded with Dolby noise reduction, use the DOLBY NR switch.**

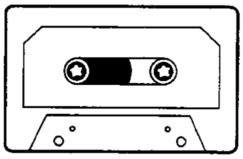
Set the switch to the same mode as the tape was recorded in.

DOLBY NR
OFF B C

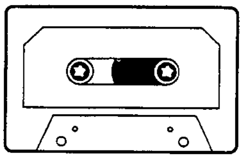
4. **Start playback by either of the following methods:**

- Press the [◁ | ▷] button.

Press the ▷ button if the tape is wound mostly on the left side.



Press the ◁ button if the tape is wound mostly on the right side.



- Press the TAPE button on the amplifier.

Note:
- When cassettes are in both decks A and B, deck B starts first.

Stopping Playback and Ejecting the Tape

1. **Press the STOP button on the tape deck.**

2. **Press the EJECT button to open and remove the tape from the cassette holder.**
3. **Shut the cassette holder.**

Note:
- If the system is turned off while a tape is playing, you may not be able to eject the tape. You will need to turn the system back on and press the EJECT button to open the cassette holder.

Stopping and Restarting Playback

1. **Press the PAUSE button on the tape deck.**

Playback of the tape in deck B stops temporarily.

Note:
- The PAUSE button only applies to deck B.

2. **Press the ◁ or ▷ button.**
   The restarts playback of the tape in deck B.

Changing the Playback Direction

1. **To change the playback direction during p'ayback, press the ◁ or ▷ button.**
   The other side of the tape will now play.
2. **To change the playback direction without starting playback, press the ◁ or ▷ button while also pressing the stop ■ button.**
   This allows you to set the tape direction for a timed recording.

First-Winding the Tape

Press the ◀◀ or ▶▶ buttons on the Tape Deck to advance the tape rapidly in the direction of the arrows.

Listening to Tape Continuously

You can set the tape deck up to play both sides of the tapes in decks A and B repeatedly.

1. **Insert cassettes into decks A and B.**
2. **Set the REV.MODE switch to ⊂⊃ (auto reverse) position.**

non reverse ← → auto reverse

- The tape deck will be placed in auto reverse mode, which means that it will play all of one side of the tape and then all of the other side.

3. **Press the ◁ or ▷ button of the deck to be started first.**

- Now both sides of both tapes will play repeatedly.
- After playback in reverse direction ends, the playing deck (A or B) will be switched to the other deck.
- If the tape deck is not placed in auto reverse mode, only one side of the tapes in deck A and B will play continuously.
- If you press the TAPE button on the Amplifier, deck B will start first.

Skipping Blanks

When there is a blank of 10 seconds or more, the tape skips forward to the beginning of the next track.

1. **Press the BLANK SKIP button on the tape deck.**

2. **Press the ◁ or ▷ button.**

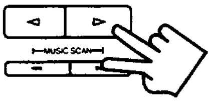
Blank Skip playback starts.

Note:
The BLANK SKIP function is not effective:
- When the track contains an area of low sound level.
- When the blank between tracks is short.
- When there is noise, for example, a hum between tracks.

Music Scanning

The music scan function will detect the blank segments between tracks. The blank should be about 4 seconds long for the music scan to be effective.

You can locate the beginning of the current track or next track quickly by pressing the playback button and the fast-winding button simultaneously.



Searching for Beginning of the Current Track

- If the tape is traveling in the forward direction, press the ◀◀ fast-winding button while simultaneously pressing the ▷ playback button.
- If the tape is traveling in the reverse direction, press the ▶▶ fast-winding button while simultaneously pressing the ◁ playback button.

Searching for Beginning of the Next Track

- If the tape is traveling in the forward direction, press the ▶▶ fast-winding button while simultaneously pressing the ▷ playback button.
- If the tape is traveling in the reverse direction, press the ◀◀ fast-winding button while simultaneously pressing the ◁ playback button.

Note:
- The deck that is playing will stop if the music scan function is used on the other deck.

The music scan function is not effective:
- When the track being scanned contains an area of low sound level.
- When the blank between tracks is short.
- When there is noise, for example, a hum between tracks.

Recording a Tape

The recording system used Dolby HX PRO to improve the high-frequency characteristic and to reduce level fluctuations at low frequencies. You will enjoy dynamic recording ranging from low through high frequencies.

Note:
- No switch operation or operation at playback si needed.

Recording Notes:

- Deck A is used for playback only, and deck B is used for both recording and playback.
- To reduce hiss, use the Dolby noise reduction system. Set the DOLBY NR switch to B or C.

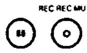
  B: Popular noise reduction
  C: Highly effective noise reduction

DOLBY NR
OFF B C

- To record on sides A and B continuously, set the REV. MODE switch to the auto reverse (⊂⊃) position, and start dubbing in the forward direction (▷) for both decks a and B.
- The recording level is set automatically.
- If the small tabs on cassette tapes to prevent accidental erasure have been removed, the contents of the tape cannot be recorded or erased over. To record or erase, cover the holes with adhesive tape. (The tab in the upper left corner is the tab for the side facing you, and the other tab is for the opposite side.)
- If you are recording an AM broadcast and you hear interference, move BEAT CUT switch on the back of the stereo from Position 1 (the normal mode) to Position 2.

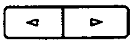
Recording from Various Sources

1. **Insert a cassette for recording into deck B.**
2. **Select the source you are recording from.**
3. **Press the Pause button on the Tape deck while simultaneously pressing the REC/REC MUTE button.**



This puts the deck B in REC/PAUSE mode.

4. **Start the source to be recorded.**
5. **Press the Play ◁ or ▷ button on the deck B to start recording.**



To record on both sides of tape, start recording in the forward (▷) direction.

6. **To stop recording, press the Stop ■ button.**
7. **To stop recording temporarily, press the Pause ❚❚ button on deck B.**
   To restart recording again, press the Play button ◁ or ▷.

Dubbing a Tape

Normal-speed Dubbing

1. **Insert the cassette for playback into deck A and the cassette for recording into deck B.**

- The type of tape (Normal, CrO_2, or Metal) used for recording must be the same as that used for playback.
- To dub a tape which was recorded with Dolby noise reduction, set the DOLBY NR switch on the Tape Deck, the D. SEA button and DSEP button on the Amplifier to a OFF position.
- When dubbing a tape, turn off BLANK SKIP.

2. **Press the Pause ❚❚ button while simultaneously pressing the REC/REC MUTE button on deck B.**
   This places deck B in REC/PAUSE mode.
3. **Press the Play button ◁ or ▷ (depending on which side of the tape you want to record from) on deck A.**
4. **Press the Play button ◁ or ▷ (depending on which side of the tape you want to record onto) on deck B.**

The tape-to-tape recording starts.

Note:
- You cannot listen to another source during normal-speed dubbing.
- To stop normal-speed dubbing before the end of either the playback or record tape, press the Stop ■ buttons on decks A and B.

High-Speed Dubbing

1. **Insert the cassette for playback into deck A and the cassette for recording into deck B.**

- To change the playback direction of deck A, hold down the Stop ■ button and press the ◁ or ▷ button.

2. **Press the HIGH SPEED DUBBING button on the Tape Deck.**

The high-speed tape-to-tape recording starts.

Note:
- You can listen to another source while high-speed dubbing is in progress.
- To stop high-speed dubbing before reaching the end of either the playback or record tape, press the Stop ■ button on deck B.
- If nearby television is on during high-speed dubbing, beeping noise may be recorded onto the recorded onto the record the record tape. turn off the television or move it farther away.

3. **Press the Stop ■ button on deck A when you hear the end of a track to record from many different tapes) for example, to create a "Greatest Hits" tape)**

Deck A stops playback, and deck B automatically creates about a 4 second blank, then pauses.

Note:
- If you don't want this blank, press the PAUSE ❚❚ button on deck B before pressing the Stop ■ button.

4. **Put another tape into deck A.**
5. **Press the HIGH SPEED DUBBING button on the Tape Deck.**
   The high-speed dubbing restarts.
6. **To record tracks from other tapes, repeat steps 3 - 5.**

- During high-speed dubbing, sound altered with D. SEA or DAP/DSEP cannot be recorded.

Note:
- It may be uniawful to record or playback copyrighted material without the consent of the copyright owner.

Erasing a Tape

1. **Insert the tape to be erased into deck B.**

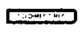
- To erase music on both sides, set the REV. MODE switch to the auto reverse position.

2. **Press the Pause ❚❚ button while simultaneously pressing the REC/REC MUTE button.**
   This puts the deck in REC/PAUSE mode.
3. **Press the TAPE button on the amplifier.**
4. **Press the ◁ or ▷ button (depending on which side of the tape you want to erase) on deck B.**
   The erasure of the tape begins.

Direct Recording from the CD Player

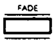
Direct recording permits a tape deck to start recording automatically in synchronism with a CD player.

1. **Insert the cassette for recording into deck B.**
- Set the REV. MODE switch to Auto reverse ⊂⊃ position if you want to record on both sides of the cassette.
2. **Put a CD in the CD Player.**
3. **Press the CD DIRECT REC button on the Tape Deck.**



- The CD Player and the Tape Deck are activated, and recording begins with the first track of the CD.
- To stop direct recording, press the Stop ■ button on deck B or the STOP/CLEAR button on the CD Player.

4. **To fade out the CD gradually at the end of the tape, press the FADE button on the CD Player.**



The volume level of the last track on the tape is lowered gradually to 0. This makes a nice ending to your tape and prevents an abrupt cut-off of music if the tape ends before the CD.

5. **To cancel the fade-out function during recording, press the FADE button again on the CD Player.**
   The fade-out function operates in both forward and reverse directions.

- When the end of the tape is reached, the tape is rewound to the beginning of the last track.
- The last track is played back again from the CD Player and recorded again on the tape, This time the sound level is reduced gradually at the end.

Dolby noise reduction and HX PRO headroom extension manufactured under license from Dolby Laboratories Licensing Corporation. HX PRO originated by Bang and Olufsen. "Dolby", the Double-D symbol and HX PRO are trademarks of Dolby Laboratories Licensing Corporation.

Recording CD Tracks in Auto-Edit Mode

In Auto-Edit mode, tracks from the CD will automatically be selected to determine which tracks should go on side A of the tape and which should go on side B.

The selection is based on the lengths of the tracks and the length of the tape. This ensures a proper "fit" of the tracks recorded on the tape. It prevents a track from being cut off when the end of the tape is reached.

1. **Insert the cassette for recording in deck B.**

- Set the REV. MODE switch to the Auto reverse ⊂⊃ position if you want to record on both sides of the cassette.

2. **Put the CD in the CD Player.**
3. **Press the STOP/CLEAR button on the CD Player.**
4. **Press the A. EDIT button on the CD Player to tell the system the length of the tape in the Tape Deck.**

- The tape length most suitable for CD recording is displayed first.
- Each time the A. EDIT button is pressed, the next standard tape length blinks, in this order:

→C46→C54→C60→C74→C90→(back to the beginning)

- You can also enter a non-standard tape length from the Remote Controller using the numeric keys.

For example: To enter a tape length of 50 minutes, press the CD 10KEY button on the Remote Controller, then press + 10 key four times and the 10 key once.

5. **Press the SIDE A/B button on the Remote Controller.**

- The CD Player calculates which tracks should be placed on side A and which should be placed on side B.
- If you do not press the SIDE A/B button, the CD Player automatically decides which tracks should be placed on sides A and B about 4 seconds after the A.EDIT button is pressed.

Note:
- Up to 16 tracks can be allocated for each side of the cassette.

6. **Press the CD DIRECT REC button on the Tape Deck.**

CD DIRECT REC

- The tape is automatically rewound to the beginning of side A, and then recording begins.
- When the Tape Deck is set in the auto reverse mode, after the last track is recorded on side A, the tape deck high-speed-erases to the end of side A. Then it changes direction to side B and begins recording the remaining tracks.
- To stop recording, press the Stop ■ button on deck B, or press the STOP/CLEAR button on the CD Player.

Note:
- During recording in the Auto-Edit Mode, do not operate the CD Player.

Recording CD Tracks in Programmed-Edit Mode

In Programmed-Edit Mode, you decide which tracks from the CD will be recorded, and in what order.

1. **Insert the cassette for recording in deck B.**

- Set the REV. MODE switch to the Auto reverse ⊂⊃ position if you want to record on both sides of the cassette.

2. **Put the CD in the CD Player.**

3. **Press the STOP/CLEAR button on the CD Player.**

4. **Press the PROG. EDIT button on the Remote Controller to tell the system the length of the tape in the Tape Deck.**

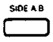
- Each time the PROG. EDIT button is pressed, the next standard tape length blinks, in this order:

→C46→C54→C60→C74→C90→(back to the beginning)

- You can enter a non-standard tape length from the Remote Controller using the numeric keys.

For example: To enter a tape length of 50 minutes, press the CD 10KEY button on the Remote Controller, then press + 10 key four times and the 10 key once.

5. **Press the SIDE A/B button on the Remote Controller.**



- This tells the system that you will be choosing tracks to be recorded on side A of the tape.
- The length of time for one side of the tape is displayed. This is half of the total tape length. The total time for the tracks you choose for each side cannot exceed this time.
- If you do not press the SIDE A/B button, side A is automatically selected.

6. **Press the CD 10KEY button on the Remote Controller.**

7. **Enter the numbers of the tracks you want recorded on one side of the tape.**

- Tracks on a CD assigned numbers 32 or greater cannot be entered in the program.
- If the length of a track exceeds the remaining tape length, the time indication blinks on the display. Choose a different track number.
- To delete a track from the program, specify the track with the AUTO SEARCH buttons on the Remote Controller. Then press the CANCEL button on the Remote Controller.

8. **If you also want to record on the other side of the tape, press the SIDE A/B button on the Remote Controller and repeat step 7.**

9. **Press the CD DIRECT REC button on the Tape Deck.**

CD DIRECT REC

- The tape is automatically rewound to the beginning of side A, and then recording begins.
- When the Tape Deck is set in the auto reverse mode, after the last track is recorded on side A, the tape deck high-speed-erases to the end of side A. Then it changes direction to side B and begins recording the remaining tracks.
- To stop recording, press the Stop ■ button on deck B, or press the STOP/CLEAR button on the CD Player.

Note:
- The program cannot be edited during recording. To change the program, press the STOP/CLEAR button on the CD Player and begin with step 4 of this procedure.

Note:
- During recording in the Programmed-Edit mode, do not operate the CD Player.

Recording with the D.SEA Function

The D.SEA Function is used to alter the tone of the source by increasing or decreasing the levels of selected frequency ranges.

You can use this function to control the way the tracks from the CD will sound when they are recorded on the tape.

1. **Insert the cassette for recording in deck B.**

2. **Press the D.SEA button on the Amplifier.**

- The indicator light will go on.
- To created the desired sound, see "Controlling Sound with the D.SEA Function".

3. **Press the ◁ or ▷ button on the Tape Deck while holding down the REC/REC MUTE button.**
   Recording starts.

D.SEA Function Notes

- The D.SEA Function cannot be used during high-speed dubbing.
- If the source you are recording from is a cassette in deck A that was created using Dolby noise reduction, the noise reduction effect is lost when you dub using the D.SEA Function.
- To keep the noise reduction effect of the cassette in deck A, use either of these methods:
  - — High-speed dubbing.
  - — Normal speed dubbing, with the D.SEA Function off and the DOLBY NR button set to OFF.
- When LEARNING CSRP is ON, do not change the volume level during recording because the loudness feature will cause the D.SEA settings to be altered.

Recording with the DAP/DSEP Function

Sound can be recorded with a DAP/DSEP effect.

1. **Insert the cassette for recording in deck B.**
2. **Press the DAP/DSEP button on the Amplifier.**

- The Indicator light will go on.
- To create the desired sound, see "PROCESSOR".

3. **Press the ◁ or ▷ button on the Tape Deck while holding down the REC/REC MUTE button.**
   Recording starts.

DAP/DSEP Function Notes

- The DAP/DSEP Function cannot be used during high-speed dubbing.
- If the source you are recording from is a cassette in deck A that was created using Dolby noise reduction effect is lost when you dub using the DAP/DSEP Function.
- To keep the noise reduction effect of the cassette deck A, use either of these methods:
  - — High-speed dubbing.
  - — Normal speed dubbing, with the DAP/DSEP Function off and the DOLBY NR button set to OFF.
- The rear speaker sound is not recorded.
- In the DOLBY SURROUND mode, the effect sound is not recorded.
- When the audio track of a DOLBY SURROUND videocassette is recorded, turn DAP/DSEP and D. SEA on the amplifier, and DOLBY NR on the tape deck, off.
- While recording, do not turn on or off DAP/DSEP.

Note:
- When sound is recorded with DAP/DSEP and D. SEA turned off, by selecting SOURCE DIRECT, higher quality sound can be recorded.

Creating a Blank During Recording

Use the Record Muting function when you do not want to record a section of the source.

1. **Press the REC/REC MUTE button on the Tape Deck at the beginning of the section you don't want to record.**

REC REC MUTE

A blank of about 4 seconds is created on the cassette, and then the deck pauses.

2. **To start recording again, press the ◁ or ▷ button.**

- To create a blank of more than 4 seconds, hold down the REC/REC MUTE button. When you release this button, the deck pauses.
- When the source you are recording from is the CD Player and the CD DIRECT REC button is used, the REC/REC MUTE button will not function.

Recording with the Timer

The Tape Deck can be set up to record a tape automatically. This is especially useful for recording broadcasts when you are not around, or late at night when you are asleep.

1. **Insert a cassette for recording into deck B.**
2. **Set the timer, by following the steps in "Setting the Timers".**
3. **Select one of the following sources:**

TUNER TIMER REC	Records TUNER preset stations
- - TIMER REC	Records from the source selected before turning off the system.

Using the Tuner

Listening to Broadcasts

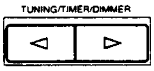
The Tuner can receive FM and AM broadcasts. Stations can be tuned in manually, automatically, or from preset memory storage.

Manual Tuning

1. **Select the broadcast band you want to tune in by pressing the FM or AM button on the Tuner.**

BAND SELECT
FM
AM

2. **Press the TUNING/TIMER/DIMMER button (◁ or ▷) to tune in a station.**



3. **Hold down the TUNING/TIMER/DIMMER button to change the frequency rapidly, then tap the button to set the frequency precisely.**

Automatic Tuning

1. **Select the broadcast band you want to tune in by pressing the FM or AM button on the Tuner.**
2. **Hold down the TUNING/TIMER/DIMMER button (◁ or ▷) for a moment, and then release the button.**

- When a station is tuned in, the TUNED indicator lights up.

Note:
- The Tuner will tune in the nearest strong station.

Presetting Stations in Memory

You can store up to 40 of your favorite radio stations (FM and AM) in memory, giving you quick, easy access to the stations.

1. **Select a band by pressing either the FM or AM button on the Tuner.**
2. **Press the TUNING/TIMER/DIMMER button (◁ or ▷) to tune in a station.**
3. **Press the MEMORY button on the Tuner.**
   The "MEMORY" indicator on the Tuner display blinks for 5 seconds.

4. **Press the PRESET button (◀ or ▶) on the Tuner to assign a number (1-40) to the station, or enter a number (1-40) with the Remote Controller's numeric keypad.**

   Example:
   To enter 7, press "7".
   To enter 17, press "+10", then "7".
   To enter 20, press "+10" then "10".

- Before using the numeric keypad, press either the FM or AM button. This will allow you to use the numeric keypad in the Tuner mode.
- If the "MEMORY" indicator has stopped blinking, press the MEMORY button again and repeat step 4.
- If the preset number you choose already has a station assigned to it, the old station will be replaced by the new one.

5. **Press the MEMORY button again.**
   This stores that station in memory, with the preset number (1-40) you chose in step 4.
6. **Repeat steps 1-5 for each station you want to store in memory with a preset number.**

Caution! If the system is unplugged or if a power failure occurs, the preset stations stored in memory may be lost.

Cancelling Preset Stations

1. **Press the CANCEL button on the Tuner.**
   The "CANCEL" light on the Tuner display blinks for 5 seconds.

2. **Press the PRESET button (◀ or ▶) on the Tuner to select the preset station you want to cancel.**
   If the "CANCEL" light has stopped blinking, press the CANCEL button again and repeat step 2.
3. **Press the CANCEL button again.**
   The preset station will be cancelled.

Tuning in Preset Stations

- Press the PRESET button (◀ or ▶) on the Tuner to select the preset station you want. The preset station numbers are displayed sequentially each time you press the PRESET button.
- You can also select a station by entering its preset number on the Remote Controller's numeric keypad.
- Before using the numeric keypad, press either the FM or AM button. This will allow you to use the numeric keypad in the Tuner mode.

FM Reception Modes

There are two FM reception modes: AUTO and MONO.

AUTO:	Stations are tuned in with either STEREO or MONO, depending on the strength of the FM signal.
MONO:	Stations are tuned in with MONO only. This will reduce interference noise of weak stations and make the reception sound better.

1. **Press the FM MODE/MUTE button on the Tuner to switch between the AUTO and MONO reception modes.**

2. **Press the FM MODE/MUTE button on the Tuner to the AUTO mode to receive the station in stereo.**

- If a stereo broadcast is received when the FM band is selected, the "STEREO" light will be displayed on the Tuner.
- If the FM Reception Mode is MONO, the "STEREO" light will not be displayed.

Using the Timers

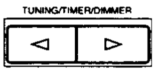
Setting the Clock

The clock will be displayed even when the system is turned off. Pressing the TUNING/TIMER/DIMMER buttons (◁ or ▷) will switch between two brightness levels for the clock.

1. **Press the CLOCK ADJUST button on the Tuner.**
   The hours digits blink.

CLOCK ADJUST

2. **Press the TUNING/TIMER/DIMMER button (◁ or ▷) to set the hours digit.**



- Press the ▷ button to increase the hour, and press the button to decrease the hours.
- To enter a new hour digit, press the CANCEL button and repeat step 2.

3. **Press the MEMORY button on the Tuner.**

   This sets the hour portion of the time.

   The minutes digits will blink.

4. **Press the TUNING/TIMER/DIMMER button (◁ or ▷) to set the minutes digit.**

- It's a good idea to set the minutes digits one minute ahead. Then you can start the clock when it reaches the set time exactly (according to the correct time from the TV, radio, or telephone).
- To enter a new minute digit, press the CANCEL button and repeat step 4.

5. **Press the MEMORY button.**
   The clock starts as soon as you press the MEMORY button.

Caution: If there is a power failure, or if you unplug the stereo, the clock time will be lost. Repeat steps 1-5 when power is restored.

- Use the TUNING/TIMER/DIMMER buttons to change luminosity of time display by two steps under STANDBY status.
  ► : Increases luminosity
  ◄ : Decreases luminosity

Setting the Timers

With the timers you can make tape recordings of broadcasts, CD's, or tapes when you're not around. You can also play these music sources at specified times without recording them.

- Use TIMER1 and TIMER2 to record a radio broadcast when you're not home, or late at night when you're asleep.
- Use the DAILY timer to record a broadcast that occurs at the same time every day.
- The procedure for setting TIMER1, TIMER2, and the DAILY timer is the same. You need to tell the system:

— The name of the timer (TIMER1, TIMER2, or DAILY).
— The time the timer should turn the system on.
— The time the timer should turn the system off.
— The source the timer should turn on (Tuner, CD, or Tape).
— The volume level that should be used during recording or playback.

Note:
- The clock must be set to the correct time for the timers to be effective.

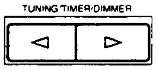
Caution! Do not operate the remote controller when you are programming the timer.

Choosing a Timer

Press the TIMER1, TIMER2, or DAILY button on the Tuner to select a timer. This puts the system in the Timer Setting mode. The information that the system expects next will blink on the display.

Setting the Start Time

1. **Press the TUNING/TIMER/DIMMER buttons to set the hour that the system will turn on.**



   The ◁ button makes the hour number decrease, and the ▷ button makes the hour number increase.

2. **Press the MEMORY button.**
   This stores the hour portion of the start-time in memory.

3. **Press the TUNING/TIMER/DIMMER buttons to set the minute.**

4. **Press the MEMORY button.**
   This stores the minute portion of the start-time in memory.

Setting the Stop Time

1. **Press the TUNING/TIMER/DIMMER buttons to set the hour that the system will turn off.**
2. **Press the MEMORY button.**
   This stores the hour portion of the stop-time in memory.
3. **Press the TUNING/TIMER/DIMMER buttons to set the minute.**
4. **Press the MEMORY button.**
   This stores the minute portion of the stop time in memory.

Selecting the Source

1. **Press the TUNING/TIMER/DIMMER button to select a source.**

   Repeatedly pressing the ▷ button displays the sources in the following order:

Display	**What it means**
_ _ _ _ _ _	Plays from whichever source was used just before turning off the system
TUNER	Plays FM or AM broadcast
TUNER TIMER REC	Records FM or AM broadcast
CD	Plays a CD
TAPE	Plays a tape
_ _ _ _ TIMER REC	Records from whichever source was used just before turning off the system

Note:
- If you choose an FM or AM radio station as the source, select the preset station by pressing the PRESET button on the Tuner.

2. **Press the MEMORY button.**
   This stores the source to play or record in memory.

Setting the Volume

1. **Press the TUNING/TIMER/DIMMER button to select a volume level.**
   Repeatedly pressing the ▷ button displays the volume levels in the following order:

Display	**What It Means**
VOL - - - -	Volume set to the level used before shut the power off.
VOL - - 0	Volume off
VOL - - A	Volume barely on
VOL - - B	Volume at 1/4 power
VOL - - C	Volume at 1/3 power

2. **Press the MEMORY button.**
   This stores the volume level for timed playback or recording in memory.

Starting the Timer

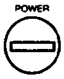
Press the Timer button to start the timer. The timer you chose should light on the display.

Note:
- If the timer light does not light, the timer was not set properly, and you need to set the start time again.

To change your selection, press the CANCEL button and enter a new value.

Turning the System Off

Press the POWER button on the Amplifier to turn the system off.



- The system is now programmed to turn on at the preset start-time, and play or record until the stop-time.
- It will record or play the preset source at the preset volume level until the stop-time is reached.
- If you turn the system on before the start-time, the timer will still operate as programmed at the start-time.

Resetting the Timers

To reset a timer, press the button (TIMER1, TIMER2, or DAILY) on the Tuner twice. Now the timer is set again and will use the same start-time, stop-time, source, and volume level as before.

Setting the Wake-Up and Sleep Timer

You can set a timer so it turns on to wake you up or turns off when you go to sleep.

Setting the Wake-Up Timer

The wake-up timer serves as an alarm clock. It turns the system on after a programmed time lapse and plays the source that was used before the system was turned off. You can set a wake-up time from between 5 minutes and 12 hours.

1. **Press the POWER switch on the Amplifier so it is off.**
2. **Press the WAKE UP/SLEEP button on the Tuner.**
   This tells the system that you are going to set the wake-up time.

WAKE UP/SLEEP

3. **Press the WAKE UP/SLEEP button repeatedly until the desired wake-up time appears.**

   Each time you press the WAKE UP/SLEEP button, the wake-up time lapse changes in the following order:

   →0:05→0:10→0:15→0:30→0:45→1:00→1:30→2:00→3:00→(every hour) →12:00→(back to the beginning)

   - If you make a mistake, press the CANCEL button on the Tuner and enter a new wake-up time with the WAKE UP/SLEEP button.

   The system will now turn on after this time lapse.

   - The wake-up timer has priority over TIMER1, TIMER2, and the DAILY timer.
     This means that if the start-time for one of the timers occurs before the wake-up time, the system will wait until the wake-up time to turn on.

Note:
- If CD is the source that will be used, playback begins with the first track.

Setting the Sleep Timer

The sleep timer is used to turn off the system after a specified time lapse. With this timer you can fall asleep listening to music, knowing that the system will shut off automatically and not stay on all night. You can set the sleep timer to turn the system off from between 5 minutes and 2 hours.

1. **Press the POWER switch on the Amplifier so it is on.**
2. **Starts the source you want to listen to.**
3. **Press the WAKE UP/SLEEP button on the Tuner.**

WAKE UP/SLEEP

This tells the system that you are going to set the sleep time.

4. **Press the WAKE UP/SLEEP button repeatedly until the desired sleep time appears.**

Each time you press the WAKE UP/SLEEP button, the sleep time lapse changes in the following order:

→ 0:05→ 0:10→ 0:15→ 0:30→ 0:45→ 1:00→ 1:15→ 1:30→ 1:45→ 2:00 → (back to the beginning)

- If you make a mistake, press the CANCEL button on the Tuner and enter a new sleep time with the WAKE UP/SLEEP button.

The system will now turn off after this time lapse.

- The sleep timer has priority over TIMER1, TIMER2, and the DAILY timer.

This means that if the stop-time for one of the timers occurs before the sleep time, the system will wait until the sleep time before turning itself off.

Checking the Remaining Time

After setting the wake-up or sleep timer, you can check the time remaining until the system turns on (wake-up time) or shuts off (sleep time).

Press the WAKE UP/SLEEP button.

The remaining time is displayed for 5 seconds. Then the clock time appears again.

Adding More Time

If you want more time before the wake-up timer turns the system on (or the sleep timer turns the system off), follow these steps:

1. **Press the WAKE UP/SLEEP button.**
The remaining time is displayed for 5 seconds. Then the clock time appears again.
2. **Press the WAKE UP/SLEEP button again before the clock time is displayed.**

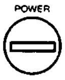
- Keep pressing this button until the desired additional time is reached.

Now the system will wait until the added amount of time until turning on or shutting off.

Cancelling the Time Setting

If you decide you don't want the system to wake you up or play music while you fall asleep, you can turn these timers off.

1. **To cancel the wake-up timer, press the POWER button on the Amplifier.**



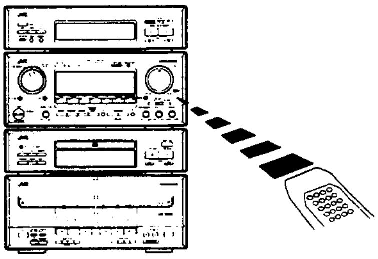
This turns the power on.

2. **To cancel the sleep timer, press the POWER button on the Amplifier.**

This turns the power off.

Using the Remote Controller

Operating the Remote Controller



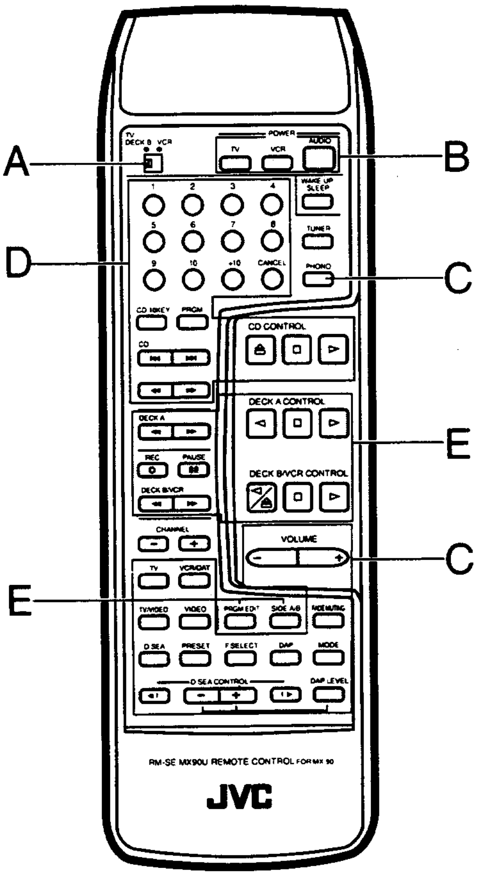
You can use the Remote Controller to operate the system without leaving your chair. You can use it up to a distance of 23 feet.

Point the Remote Controller at the remote sensor on the Amplifier.

Note:
- When the Tuner is selected as the source, and Cd OFF is displayed, only the OPEN/CLOSE and PLAY buttons on the Remote Controller can be used.

To use other buttons on the Remote Controller (for programming and other operations), press the CD button on the Amplifier or the CD PLAY button on the Remote Controller first.

When using the TV/deck B, set switch **A** to TV/DECK B. When using the VCR, set the switch to VCR.



Function	Button (s) To Use
B Turn on the main unit	AUDIO
Turn on the TV	TV
Turn on the VCR	VCR

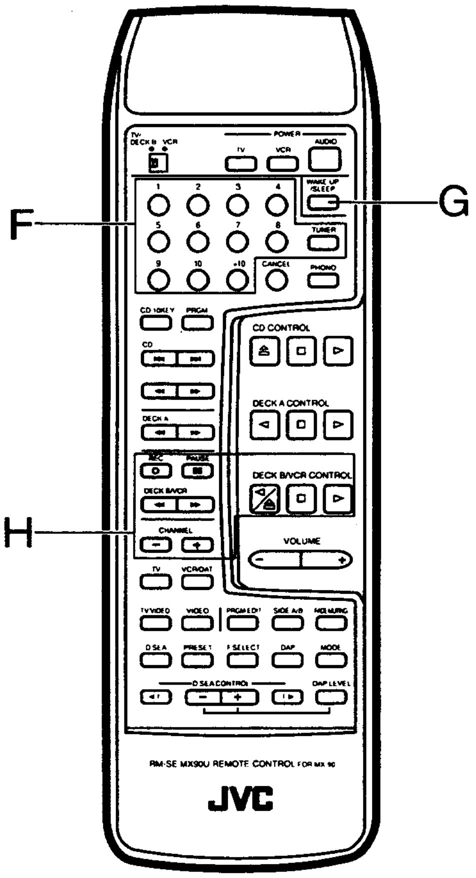
C **Amplifier**

Function	Button (s) To Use
Adjust volume level	VOLUME – | +
Gradually reduce the volume to zero (If you press it again, the volume will return to roughly what it was before.)	FADE MUTING
Set the SOURCE SELECTOR of the amplifier to PHONO	PHONO
Set the SOURCE SELECTOR of the amplifier to VCR/DAT	VCR/DAT
Set the SOURCE SELECTOR of the amplifier to TV	TV
Change the TV input (TV, VIDEO 1, VIDEO 2)	TV/VIDEO
Set the SOURCE SELECTOR of the amplifier to VIDEO/VDP	VIDEO
Turning D.SEA Function on or off	D.SEA
Using a D.SEA pattern	PRESET
FREQUENCY SELECT	F.SELECT
FREQUENCY ◄ , ►	◄ , ►
Setting a D.SEA level	– | +
Turning DAP/DSEP Function on or off	DAP
Using a DAP/DSEP pattern	MODE
Setting a DAP/DSEP level	DAP LEVEL + – | +

D **CD Player**

Function	Button (s) To Use
Open and close the disk tray	⏏
Play a CD	▷
Stop playback of a CD	□
Place numeric keys in CD mode	CD 10KEY
Select track number	1 ~ +10
Scanning through the track number	⏮ | ⏭
Search for a certain part of the track	◄◄ | ►►
Program playback order	PRGM

Note: Where '+' is indicated, press and hold the first button illustrated, then press the second.


F
G
H
TV-DECK B VCR
POWER
TV
VCR
AUDIO
1
2
3
4
WAKE UP /SLEEP
5
6
7
8
TUNER
9
10
+10
CANCEL
PHONO
CD 10KEY
PRGM
CD
CD CONTROL
DECK A
DECK A CONTROL
REC
PAUSE
DECK B/VCR
DECK B/VCR CONTROL
CHANNEL
VOLUME
TV
VCR/SAT
TV/VIDEO
VIDEO
PRGM EDIT
SIDE A/B
MIC MUTING
D.SEA
PRESET
F.SELECT
DAP
MODE
D.SEA CONTROL
DAP LEVEL
RM-SE MX90U REMOTE CONTROL FOR MX 90
JVC

Function	Button (s) To Use
E Tape Deck	
(Press buttons corresponding to the deck being used, either deck A or B)	
Play a tape in forward direction	▷
Play a tape in reverse direction	◁
Stop playback temporarily (deck B)	PAUSE ❚❚
Stop playback	□
Fast forwarding or fast rewinding	◀◀ ▶▶
Search for beginning of the track while in forward direction	▷ + ◀◀ ▶▶
Search for beginning of the track while in reverse direction	◁ + ◀◀ ▶▶
Recording in forward direction	REC ○ + ▷
Recording in reverse direction	REC ○ + ◁
Pausing recording	REC ○ + PAUSE ❚❚
Stopping recording	□
Recording from CD in the Programmed-Edit mode	PRGM EDIT, CD 10KEY, SIDE A/B 1 ○ ~ 10 ○, +10 ○
F Tuner	
Selecting Tuner mode	TUNER
Selecting a preset station	1 ○ ~ 10 ○, +10 ○
G Timers	
Setting the wake-up/sleep timer	WAKE UP /SLEEP
H VCR	
Recording	REC ○ + ▷
Play a tape	▷
Stop playback	□
Stop recording or playback temporarily	PAUSE ❚❚
Rewind the tape	◀◀
Fast forwarding	▶▶
Select a TV channel	+ + −
Eject the videocassette	◁/⏏

- When using the remote controller to operate a VCR, point the controller at the VCR.

TV

Select a TV channel	+, −

Troubleshooting

Symptom	Possible Cause	Action
No sound is heard.	Speakers are connected incorrectly.	Re-connect speakers (see "Connecting the System Component" on page 6).
	Is MIXING LEVEL set to MIC?	Set MIXING LEVEL to SOURCE.
Impossible to record.	Tape tabs are broken out.	Cover tabs with adhesive tape.
Interference during broadcast.	Antenna is disconnected.	Re-connect the antenna securely.
	The loop antenna is too close to the system.	Change the position and direction of the loop antenna.
CD sound is discontinuous.	The CD is scratched or stained.	Clean or replace the CD.
The Remote Controller cannot be operated.	There is an obstruction blocking the remote sensor on the amplifier.	Remove the obstruction.
	The batteries of the Remote Controller are weak.	Replace the batteries.
The CD disc tray cannot be operated.	Are the power cord and the system connector unplugged?	Plug the power cord and the system connector in prooerly.
The CD does not play.	The CD is in the tray upside down.	Put the CD in the tray with the label side facing up.
Operations are disabled.	The built-in microprocessor may malfunction due to external electrical interference.	Unplug the system, then plug it back in.
The casette holder cannot be opened.	The system was turned off because the timer was operated while the tape was running.	Turn on the system.

Specifications

Amplifier

AUDIO SECTION
SOURCE DIRECT SW ON
Output Power

SPEAKERS A (Main)	**45 watts per channel (Main: 21 watts per channel, min. RMS, both channels driven into 8 ohms, from 200 Hz to 20 kHz, with no more then 0.9% total harmonic distortion.**
SPEAKERS B (Bubwoofer)	**24 watts per channel, min. RMS, both channels driven into 6 ohms, from 20 Hz to 200 Hz, with no more than 0.9% total harmonic distortion.**
REAR SPEAKERS	10 watts per channel, min. RMS, both channels driven into 16 ohms, at 1kHz.
Total Harmonic Distortion at Half-Rated)Power	0.07%
Input Sensitivity/ Impedance (1 kHz)	
VCR/DAT, VIDEO/VDP, TV	200mV/47k ohms
PHONO	3mV/47k ohms
MIC	2mV/10k ohms
D. SEA Center Frequencies	63, 86, 117, 160, 218, 296, 400, 544, 740, 1k, 1.36k, 1.85k, 2.5k, 3.4k, 4.63k, 6.3k, 8.56k, 11.7k, 16kHz
D. SEA Control Range	± 12dB

VIDEO SECTION

MONITOR VCR-	
OUTPUT LEVEL	1Vp-p
IMPEDANCE	75 ohms
VCR, VIDEO/VDP	
INPUT LEVEL	1Vp-p
IMPEDANCE	75 ohms
Dimensions (W x H x D)	10-7/8 x 4-9/16 x 11-1/2 inches (275 x 115 x 294 mm)
Weight	10.9 lbs (5.3 kg)

Compact Disc Player

Dynamic Range	90dB
Signal-to-Noise Ratio	100dB
Wow and Flutter	Unmeasurable
Dimensions (W x H x D)	10-7/8 x 2-11/16 x 10-7/16 inches (275 x 68 x 265 mm)
Weight	4.5 lbs (2.0 kg)

Tape Deck

Frequency response	
Metal:	30 — 17,000Hz
CrO_2:	30 — 16,000Hz
Normal:	30 — 15,000Hz
Wow and Flutter (WRMS)	0.09%
Dimensions (W x H x D)	10-7/8 x 4-9/16 x 10-1/2 inches (275 x 115 x 266 mm)
Weight	6.2 lbs (2.8 kg)

Tuner

FM

Tuning range	87.5 MHz — 108.0 MHz
Usable Sensitivity	0.95μV/75 ohms (10.8dBf)
Signal-to-Noise Ratio (IHF-A Weight)	
MONO	80dB
STEREO	73dB

AM Tuner

Tuning range

MW

U.S.A. and Canada	530 kHz ~ 1710 kHz
U.K., Continental Europe and Australia	522 kHz ~ 1629 kHz
Other area	531 kHz ~ 1602 kHz 530 kHz ~ 1600 kHz

LW	144 kHz ~ 353 kHz

Accessories

FM Feeder antenna	1
AM Loop antenna	1
Speaker cable	2
Remote Controller (RM-SEMX90U)	1
Batteries (UM-4/AAA/R03)	2

Design and specifications subject to change without notice.

POWER SPECIFICATIONS

[illegible]	[illegible]	[illegible]
Canada	AC 120 V ∿ , 60 Hz	190 watts, 295VA
Continental Europe	AC 230 V ∿ , 50 Hz	180 watts
U. K	AC 240 V ∿ , 50 Hz	390 watts
Australia		
Other areas	AC 110-127/220-240 V ∿ , selectable, 50/60 Hz	195 watts

— 29 —

— MEMO —

JVC
VICTOR COMPANY OF JAPAN, LIMITED
AUDIO PRODUCTS DIVISION, 1644, SHIMOTSURUMA, YAMATO-SHI, KANAGAWA-KEN, 242, JAPAN

(No.20268)

Printed in Japan
9106[S]

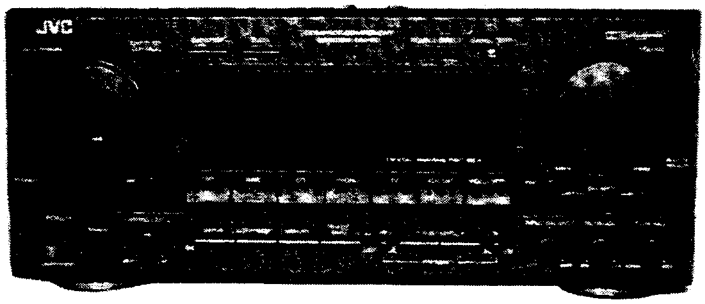
664

JVC

SERVICE MANUAL

COMPACT COMPONENT SYSTEM

DX-MX90BK
CA-MX90BK
(UNIT No. AX-MX90BK)



* For instruction manual, please refer to the CA-MX90BK(SM.NO.20267) or DX-MX90BK(SM.NO.20268).

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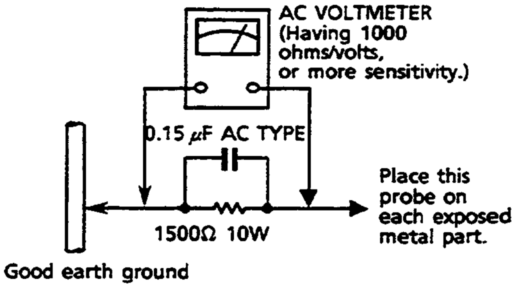
Connection Diagram .... Insertion
Printed Circuit Boards .... Insertion
Schematic DiagramsBlock Diagrams .... Insertion
Parts List .... Separate-volume Insertion

No. 20269
Jun. 1991

664

Safety Precautions

1. The design of this product contains special hardware and many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Services should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the product should not be made. Any design alterations of the product should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacture of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the Parts List of Service Manual. Electrical components having such features are identified by shading on the schematics and by (⚠) on the Parts List in the Service Manual. The use of a substitute repalcement which does not have the same safety characteristics as the recommended replacement parts shown in the Parts List of Service Manual may create shock, fire, or other hazards.
4. The leads in the products are routed and dressed with ties, clamps, tubings, barriers and the like to be separated from live parts, high temperature parts, moving parts and/or sharp edges for the prevention of electric shock and fire hazard. When service is required, the original lead routing and dress should be observed, and it should be confirmed that they have been returned to normal, after re-assembling.
5. Leakage currnet check (Electrical shock hazard testing)
   After re-assembling the product, always perform an isolation check on the exposed metal parts of the product (antenna terminals, knobs, metal cabinet, screw heads, headphone jack, contorl shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.
   Do not use a line isolation transformer during this check.
   - Plug the AC line cord directly into the AC outlet. Using a "Leakage Current Tester", measure the leakage current from each exposed metal parts of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground. Any leakage current must not exceed 0.5mA AC (r.m.s.).
   - Alternate check method
     Plug the AC line cord directly into the AC outlet. Use an AC voltmeter having, 1,000 ohms per volt or more sensitivity in the following manner. Connect a 1,500Ω 10 W resistor paralleled by a 0.15 μF AC-type capacitor between an exposed metal part and a known good earth ground.
     Measure the AC voltage across the resistor with the AC voltmeter.
     Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and meausre the AC voltage across the resistor.
     Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75 V AC (r.m.s.). This corresponds to 0.5 mA AC (r.m.s.).



Warning

1. This equipment has been designed and manufactured to meet international safety standards.
2. It is the legal responsibility of the repairer to ensure that these safety standards are maintained.
3. Repairs must be made in accordance with the relevant safety standards.
4. It is essential that safety critical components are replaced by approved parts.
5. If mains voltage selector is provided, check setting for local voltage.

Technical Explanations

■ AV Compu Link

1 Description

AV Compu Link is a system to simplify A/V equipment operation that has been complicated and troublesome with systematization of A/V components.

Take note that A/V Compu Link system is different from conventional " COMPU LINK-1" and " AV control " systems employed in some of video equipment. So,do not use " COMPU LINK-1 SYNCHRO " terminals and ordinary AV control terminal for connection.

2. Signal of AV Compu Link

(1) Status information (new format)

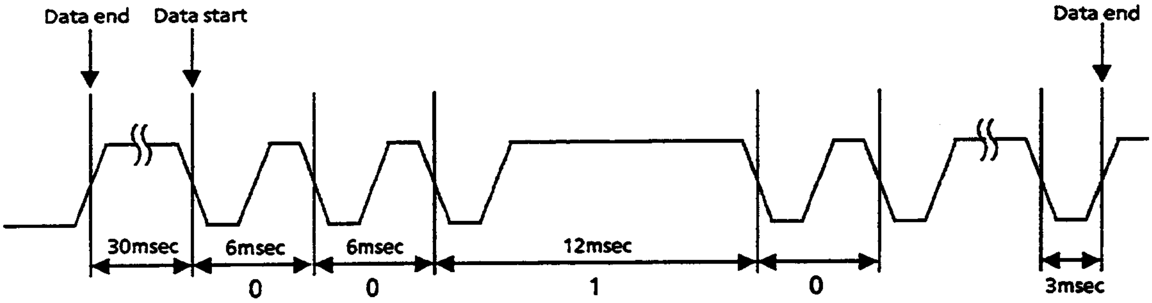
AX-MX90BK receives necessary data about change in state from VCR as input of status information.

Input data is composed of 8 bits of which upper 3 bits are for equipment code and lower 5 bits are for status information.

On the other hand , AX-MX90BK outputs command data to VCR and TV through remote control cord (JVC standard).

(2) Specifications of status signal

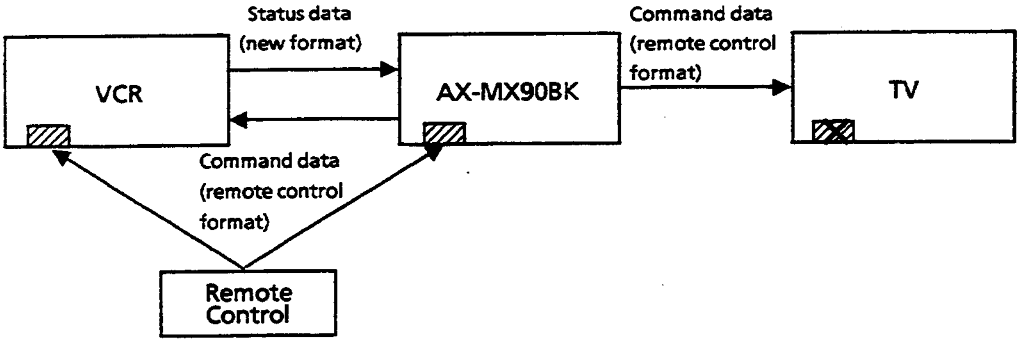
See the figures below.



Data end
Data start
Data end
30msec
6msec
6msec
12msec
0
0
1
0
3msec

Input signal to AX-MX90BK

1) Transmission of new data is started (Data start) more than 30 msec after the rise of previous Data end.
2) Data 0 : 6 msec
   Data 1 : 12 msec
3) End of data (DATA END) is at the rise of the 9th pulse.



Status data
(new format)
Command data
(remote control
format)
VCR
AX-MX90BK
TV
Command data
(remote control
format)
Remote
Control

Note : Take note that TV's remote sensor is inactivated when the AV Compu Link terminal is in connection , and the TV is controlled by signal that amplifier recives.

■ Air-cooling Fan

1. Outline

By using an air blower with a motor in the AX-MX90BK, the heat sink has been made smaller and high power has been achieved in a compact format. The air blower rotates with a 2-step speed acording to the music signal level. The rise of the temperature in the heat sink is detected by a thermistor, and if the temperature becomes abnomal, the speaker relay is switched off.

2. Operation principal

The music signal level detected by the A/D converter (IC906) is input to the microcomputer, and the fan motor is driven with a 2-step speed according to that signal level. The temperature of the heat sink is detected by the resistance value of the thermistor (SR500), and is input to the A/D converter (IC906).

3. Fan operation (standard value)

① The fan rotats at low speed when the speaker output continues for 1 minute or more (continuously more than 4V or at a music peak above 10V).

② The fan rotats at high speed when the condition of ① continues for more than 1 minute.

③ When the signal ditection is turned off while the fan is rotating, the fan will be stopped after 1 minute.

④ The fan rotates at low speed when the thermistor temperature becomes 80 degrees.

⑤ The fan rotates at high speed when the temperature keeps 80 degrees for 1 minute or more.

⑥ When condition ② continues, the rotation is stopped for 7 Seconds after 30 minutes and, thereafter, high speed rotation will continue.

■ Check of Fan Motor Rotation

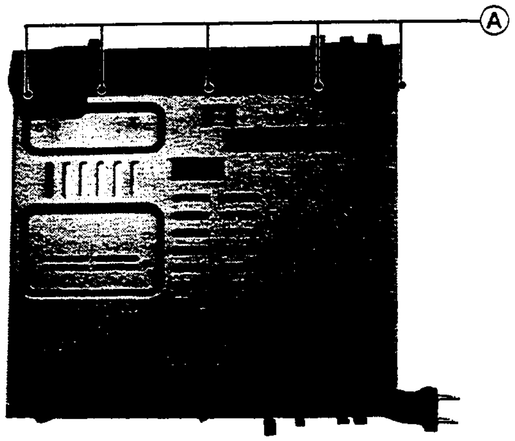
① Short-circuit between collector and emitter of Q507.

② Short-circuit between collector and emitter of Q506.

Disassembly Procedures

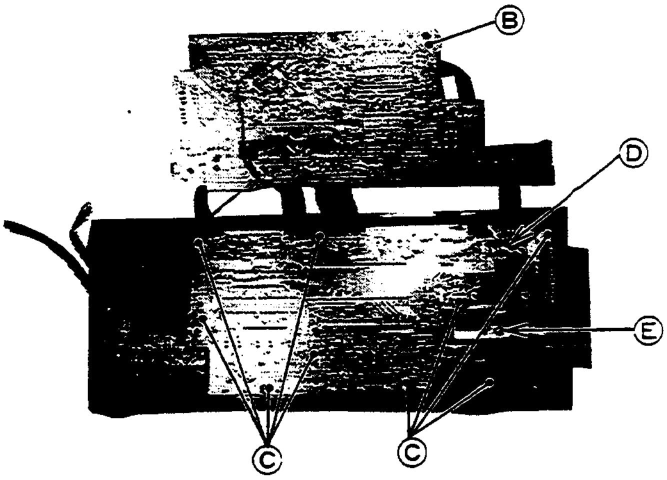
■ Removing the Top Cover

1. Remove the screw on each side and the 4 screws on the rear side.
2. Pull the top cover slightly backward and lift it while spreading the backs of the left and right sides to remove it.



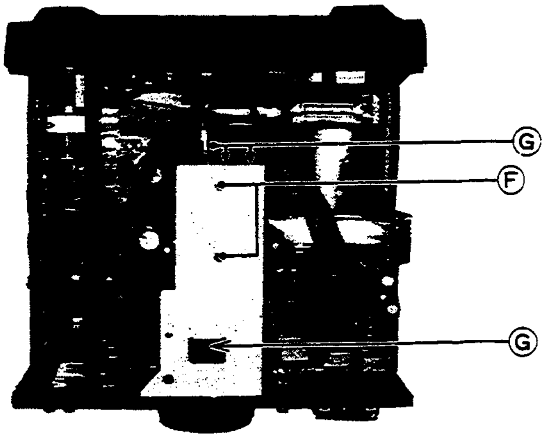
■ Removing the Front Panel

1. Remove the top cover.
2. Remove the 4 small volume knobs and main volume knob.
3. Remove the nat fixing a shaft of main volume to front panel.
4. Remove 5 screws Ⓐ fixing bottom of the front panel.



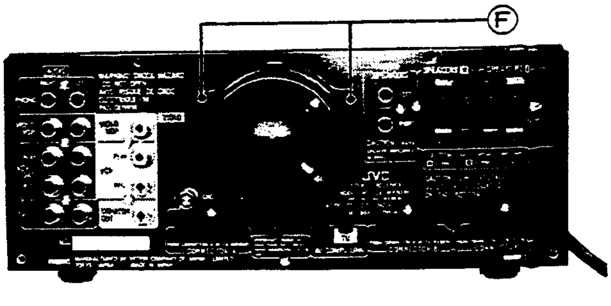
■ Removing the Front P.C.Board

1. Remove the front panel.
2. Remove the JOG dial knob.
3. Remove the 3 hooks fixing upper side circuit board Ⓑ, then lift thee circuit board up.
4. Remove the 10 screws Ⓒ fixing lower side circuit board Ⓓ and 1 screw Ⓔ fixing small circuit board.



■ Removing the Front P.C.Board

1. Remove the top cover.
2. Remove the 4 screws Ⓕ fixing the bracket.
3. Remove the 4 screws Ⓖ fixing the heat sink.
4. Pull out the heat sink assembly from main P.C.Board.

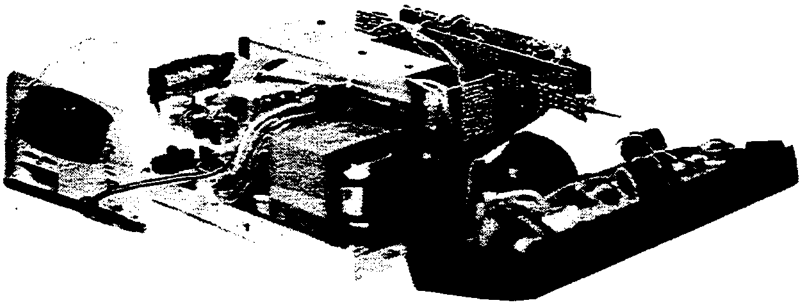


Mini Suggestion For Inspection With Active Power

① Remove the front panel.

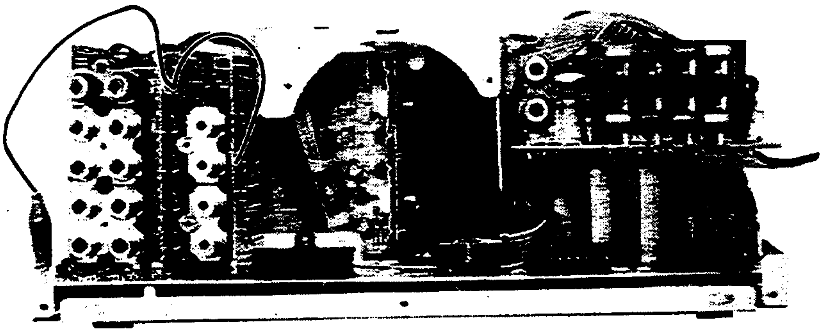
② Remove the rear panel.

○ Condition after the above procedure ① through ② is shown in below.



○ For grounding to the chassis:

Connect the grounds of the AUDIO pin jack and the VIDEO pin jack with each other, and ground the both grounds to the bottom chassis since the audio and video systems are grounded from the respective grounds of the pin jacks to the bottom cover through the rear panel.



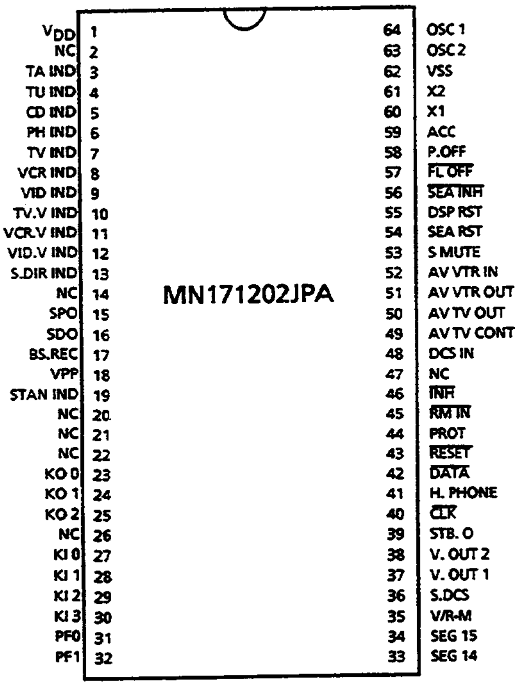
○ When AUDIO output is abnormal with the SOURCE DIRECT set to ON, it is recommended to remove the DAP circuit board temporarily for checkup.

○ For checkup of the AUDIO system, it is recommended to remove the VIDEO circuit board temporarily.
However, don't remove the VIDEO circuit board for checkup the Dolby surround effect since the DOLBY IC is installed on the circuit board.

Description of Major LSIs

■ MN171202JPA (IC904) : System Controller

1. Terminal Layout


MN171202JPA
V_{DD} 1
NC 2
TA IND 3
TU IND 4
CD IND 5
PH IND 6
TV IND 7
VCR IND 8
VID IND 9
TV.V IND 10
VCR.V IND 11
VID.V IND 12
S.DIR IND 13
NC 14
SPO 15
SDO 16
BS.REC 17
VPP 18
STAN IND 19
NC 20
NC 21
NC 22
KO 0 23
KO 1 24
KO 2 25
NC 26
KI 0 27
KI 1 28
KI 2 29
KI 3 30
PF0 31
PF1 32
64 OSC 1
63 OSC 2
62 VSS
61 X2
60 X1
59 ACC
58 P.OFF
57 $\overline{\text{FL OFF}}$
56 $\overline{\text{SEA INH}}$
55 DSP RST
54 SEA RST
53 S MUTE
52 AV VTR IN
51 AV VTR OUT
50 AV TV OUT
49 AV TV CONT
48 DCS IN
47 NC
46 $\overline{\text{INH}}$
45 $\overline{\text{RM IN}}$
44 PROT
43 $\overline{\text{RESET}}$
42 $\overline{\text{DATA}}$
41 H. PHONE
40 $\overline{\text{CLK}}$
39 STB. O
38 V. OUT 2
37 V. OUT 1
36 S.DCS
35 V/R-M
34 SEG 15
33 SEG 14

2. Key matrix

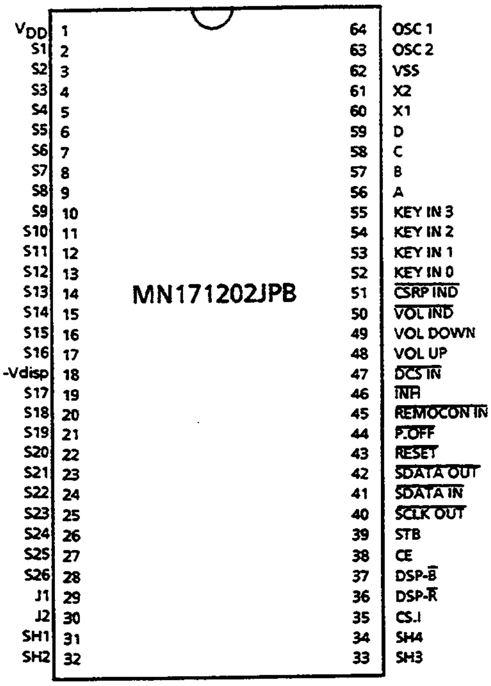
	KI-0	KI-1	KI-2	KI-3
KO-0	POWER	S.DIRECT	-	-
KO-1	-	TV	VCR/DAT	VIDEO/VDP
KO-2	TUNER	TAPE	CD	PHONO

3. Pin Functions

NO.	symbol	I/O	Functions	NO.	symbol	I/O	Functions
1	VDD	-	Power supply (+5V)	33	SEG 14	I	Pull up
2	NC	O		34	SEG 15	I	〃
3	TAPE IND	O	Indicator control signal output	35	V/R;M	O	REC MUTE signal output
4	TUNER IND	O	〃	36	S.DCS	O	
5	CD IND	O	〃	37	V.OUT 1	O	Video output control
6	PHONO IND	O	〃	38	V.OUT 2	O	〃
7	TV IND	O	〃	39	STB. O	O	Strobe signal output to IC510
8	VCR IND	O	〃	40	$\overline{\text{CLK}}$	O	Serial clock output to IC510
9	VIDEO IND	O	〃	41	H.PHONE	O	Head phone control signal output
10	TV.V IND	O	〃	42	$\overline{\text{DATA}}$	O	Serial data output to IC510
11	VCR.V IND	O	〃	43	$\overline{\text{RESET}}$	I	Reset signal input
12	VIDEO.V IND	O	〃	44	PROT	I	
13	S.DIR IND	O	〃	45	$\overline{\text{RM IN}}$	I	Remote control signal input
14	NC	O		46	$\overline{\text{INH}}$	I	Inhibit signal input
15	SPO	O	Speaker output control	47	NC	I	
16	SDO	O	Control signal output to IC503	48	DCS IN	I	Compu-link signal input
17	BS.REC	O	BS recording control output	49	AV.TV CONT	O	Control the remote signal to TV
18	VPP	-		50	AV.TV OUT	O	AV Compulink signal output for TV
19	STANDBY IND	O	Indicator control signal output	51	AV.VTR OUT	O	AV Compu-link signal output for VTR
20	NC	O		52	AV.VTR IN	I	AV Compu-link signal input for VTR
21	NC	O		53	S.MUTE	O	Muting signal output
22	NC	O		54	SEA.RST	O	Reset signal output
23	KO 0	O	Key matrix output	55	DSP.RST	O	Reset signal output to IC650
24	KO 1	O	〃	56	$\overline{\text{SEA INH}}$	O	Inhibit signal output
25	KO 2	O	〃	57	$\overline{\text{FL OFF}}$	O	FL indication control output
26	NC	O		58	P.OFF	O	Power off signal output
27	KI 0	I	Key matrix input	59	ACC	O	Power supply control output
28	KI 1	I	〃	60	X1	–	Connect to ground
29	KI 2	I	〃	61	X2	–	Non connection
30	KI 3	I	〃	62	VSS	–	Connect to ground
31	PF 0	-	Connect to ground	63	OSC2	O	Output of Xtal oscillation circuit
32	PF 1	-	〃	64	OSC1	I	Input to Xtal oscillation circuit

■ MN171202JPB (IC900) : FL & System controller

1. Terminal Layout


MN171202JPB
VDD 1
S1 2
S2 3
S3 4
S4 5
S5 6
S6 7
S7 8
S8 9
S9 10
S10 11
S11 12
S12 13
S13 14
S14 15
S15 16
S16 17
-Vdisp 18
S17 19
S18 20
S19 21
S20 22
S21 23
S22 24
S23 25
S24 26
S25 27
S26 28
J1 29
J2 30
SH1 31
SH2 32
64 OSC 1
63 OSC 2
62 VSS
61 X2
60 X1
59 D
58 C
57 B
56 A
55 KEY IN 3
54 KEY IN 2
53 KEY IN 1
52 KEY IN 0
51 CSRP IND
50 VOL IND
49 VOL DOWN
48 VOL UP
47 DCS IN
46 INH
45 REMOCON IN
44 P.OFF
43 RESET
42 SDATA OUT
41 SDATA IN
40 SCLK OUT
39 STB
38 CE
37 DSP-B
36 DSP-R
35 CS.I
34 SH4
33 SH3

2. Key matrix

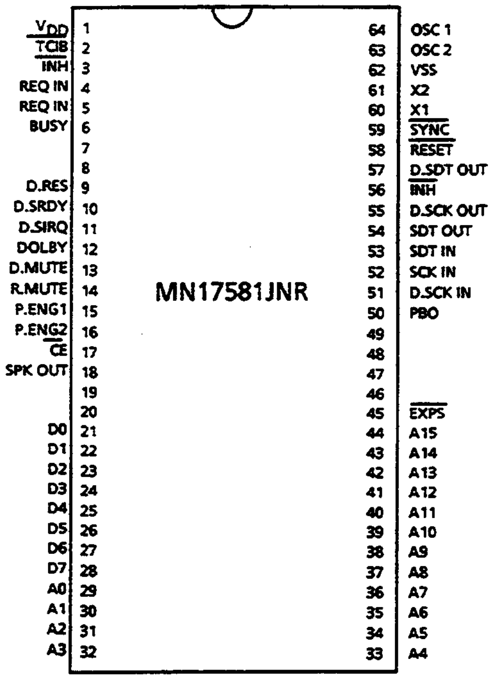
	KI-0	KI-1	KI-2	KI-3
Y0	UP	CSRP	F.SELECT	DISPLAY
Y1	▶	SEA	◀	PRESET
Y2	DEMO	DAP	DOWN	MEMORY

3. Pin Functions

NO.	symbol	I/O	Functions
1	VDD	-	Power supply (+5V)
2	S1	O	FL segment control output
3	S2	O	〃
4	S3	O	〃
5	S4	O	〃
6	S5	O	〃
7	S6	O	〃
8	S7	O	〃
9	S8	O	〃
10	S9	O	〃
11	S10	O	〃
12	S11	O	〃
13	S12	O	〃
14	S13	O	〃
15	S14	O	〃
16	S15	O	〃
17	S16	O	〃
18	-Vdisp	-	Power supply for FL display
19	S17	O	FL segment control output
20	S18	O	〃
21	S19	O	〃
22	S20	O	〃
23	S21	O	〃
24	S22	O	〃
25	S23	O	〃
26	S24	O	〃
27	S25	I	〃
28	S26	I	〃
29	J1	I	JOG/SHUTTLE signal input
30	J2	I	〃
31	SH1	I	〃
32	SH2	I	〃
33	SH3	I	JOG/SHUTTLE signal input
34	SH4	I	〃
35	CS.I	O	Connect to ground
36	DSP-$\overline{\text{R}}$	O	DSP-R signal output to IC650
37	DSP-$\overline{\text{B}}$	O	DSP-B signal output to IC650
38	CE	O	Chip enable signal output to IC906
39	STB	O	Strobe signal output to IC905
40	$\overline{\text{SCLK OUT}}$	O	Serial clock output to IC605,905,906
41	$\overline{\text{SDATA IN}}$	O	Serial data input from IC906
42	$\overline{\text{SDATA OUT}}$	O	Serial data output to IC605,905,906
43	$\overline{\text{RESET}}$	I	Reset signal input
44	$\overline{\text{P.OFF}}$	I	Power off signal input from IC904
45	$\overline{\text{REMOCON IN}}$	I	Remote control signal input
46	$\overline{\text{INH}}$	I	Inhibit signal input
47	$\overline{\text{DCS IN}}$	I	Compulink signal input
48	VOL.UP	I	Volume control signal output
49	VOL.DOWN	O	〃
50	$\overline{\text{VOL.IND}}$	O	Volume indicator control output
51	$\overline{\text{AI IND}}$	O	AI indicator control output
52	KEY IN0	I	Key matrix input
53	KEY IN1	O	〃
54	KEY IN2	O	〃
55	KEY IN3	O	〃
56	A	O	FL grid control output
57	B	O	〃
58	C	O	〃
59	D	O	〃
60	X1	—	Connect to ground
61	X2	—	Non connection
62	Vss	—	Connect to ground
63	OSC 2	O	Output of Xtaloscillation circuit
64	OSC 1	I	Input to Xtal oscillation circuit

■ MN17581JNR (IC650) : DSP Controller

1. Terminal Layout

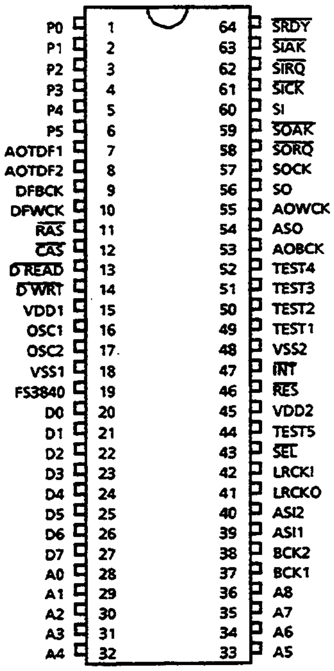

MN17581JNR
VDD 1
$\overline{\text{TCIB}}$ 2
$\overline{\text{INH}}$ 3
REQ IN 4
REQ IN 5
BUSY 6
7
8
D.RES 9
D.SRDY 10
D.SIRQ 11
DOLBY 12
D.MUTE 13
R.MUTE 14
P.ENG1 15
P.ENG2 16
$\overline{\text{CE}}$ 17
SPK OUT 18
19
20
D0 21
D1 22
D2 23
D3 24
D4 25
D5 26
D6 27
D7 28
A0 29
A1 30
A2 31
A3 32
64 OSC 1
63 OSC 2
62 VSS
61 X2
60 X1
59 $\overline{\text{SYNC}}$
58 $\overline{\text{RESET}}$
57 D.SDT OUT
56 $\overline{\text{INH}}$
55 D.SCK OUT
54 SDT OUT
53 SDT IN
52 SCK IN
51 D.SCK IN
50 PBO
49
48
47
46
45 $\overline{\text{EXPS}}$
44 A15
43 A14
42 A13
41 A12
40 A11
39 A10
38 A9
37 A8
36 A7
35 A6
34 A5
33 A4

2. Pin Functions

NO.	symbol	I/O	Functions	NO.	symbol	I/O	Functions
1	VDD	-	Power supply (+5V)	33	A4	I	P-ROM Add output
2	$\overline{\text{TCIB}}$	O	Connect to ground	34	A5	I	〃
3	$\overline{\text{INH}}$	O	Inhibit signal input	35	A6	O	〃
4	REQ IN	O	DSP-R signal input from IC900	36	A7	O	〃
5	REQ IN	O	〃	37	A8	O	〃
6	BUSY	O	DSP-B signal output to IC900	38	A9	O	〃
7		O	Not used	39	A10	O	〃
8		O	〃	40	A11	O	〃
9	D.RES	O	Reset signal output to IC651	41	A12	O	〃
10	D.SRDY	O	SRDY signal output to IC651	42	A13	O	〃
11	D.SIRQ	O	SIRQ signal output to IC651	43	A14	I	〃
12	DOLBY	O	Dolby control signal output	44	A15	I	〃
13	D.MUTE	O	Mute signal output	45	$\overline{\text{EXPS}}$	I	Pull up
14	R.MUTE	O	〃	46		I	Not used
15	P.ENG1	O	Fan control signal output	47		I	〃
16	P.ENG2	O	〃	48		I	〃
17	$\overline{\text{CE}}$	O	CE signal output to IC659	49		O	〃
18	SPK OUT	-	Speaker out control signal input	50	PBO	O	Pull up
19		O	Not used	51	D.SCK IN	O	Clock signal input from IC651
20		O	〃	52	SCK IN	I	Clock signal input from IC900
21	D0	O	P-ROM data input	53	SDT IN	O	Data signal input from IC900
22	D1	O	〃	54	SDT OUT	O	Data signal output to IC900
23	D2	O	〃	55	D.SCK OUT	O	Clock signal output to IC651
24	D3	O	〃	56	$\overline{\text{INH}}$	O	Inhibit signal input
25	D4	O	〃	57	D.SDT OUT	O	Serial data output to IC651
26	D5	O	〃	58	$\overline{\text{RESET}}$	O	Reset signal input from IC904
27	D6	I	〃	59	$\overline{\text{SYNC}}$	O	Not used
28	D7	I	〃	60	X2	–	〃
29	A0	I	P-ROM Add output	61	X1	–	〃
30	A1	I	〃	62	VSS	–	Connect to ground
31	A2	-	〃	63	OSC2	O	Output of Xtal oscillation circuit
32	A3	-	〃	64	OSC1	I	Input to Xtal oscillation circuit

■ LC8301A (IC651) : DSP (Digital Signal Processor)

1. Terminal layout

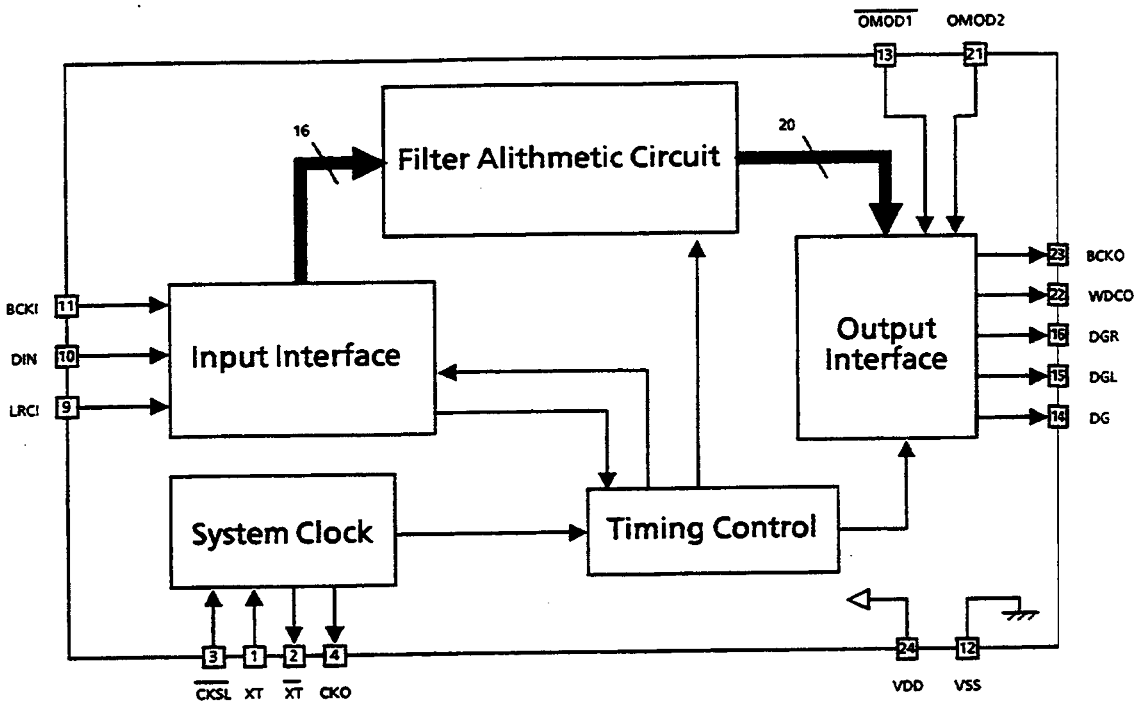

P0 1
P1 2
P2 3
P3 4
P4 5
P5 6
AOTDF1 7
AOTDF2 8
DFBCK 9
DFWCK 10
$\overline{RAS}$ 11
$\overline{CAS}$ 12
$\overline{D\ READ}$ 13
$\overline{D\ WRT}$ 14
VDD1 15
OSC1 16
OSC2 17
VSS1 18
FS3840 19
D0 20
D1 21
D2 22
D3 23
D4 24
D5 25
D6 26
D7 27
A0 28
A1 29
A2 30
A3 31
A4 32
64 $\overline{SRDY}$
63 $\overline{SIAK}$
62 $\overline{SIRQ}$
61 $\overline{SICK}$
60 SI
59 $\overline{SOAK}$
58 $\overline{SORQ}$
57 SOCK
56 SO
55 AOWCK
54 ASO
53 AOBCK
52 TEST4
51 TEST3
50 TEST2
49 TEST1
48 VSS2
47 $\overline{INT}$
46 $\overline{RES}$
45 VDD2
44 TEST5
43 $\overline{SEL}$
42 LRCKI
41 LRCKO
40 ASI2
39 ASI1
38 BCK2
37 BCK1
36 A8
35 A7
34 A6
33 A5

2. Pin functions

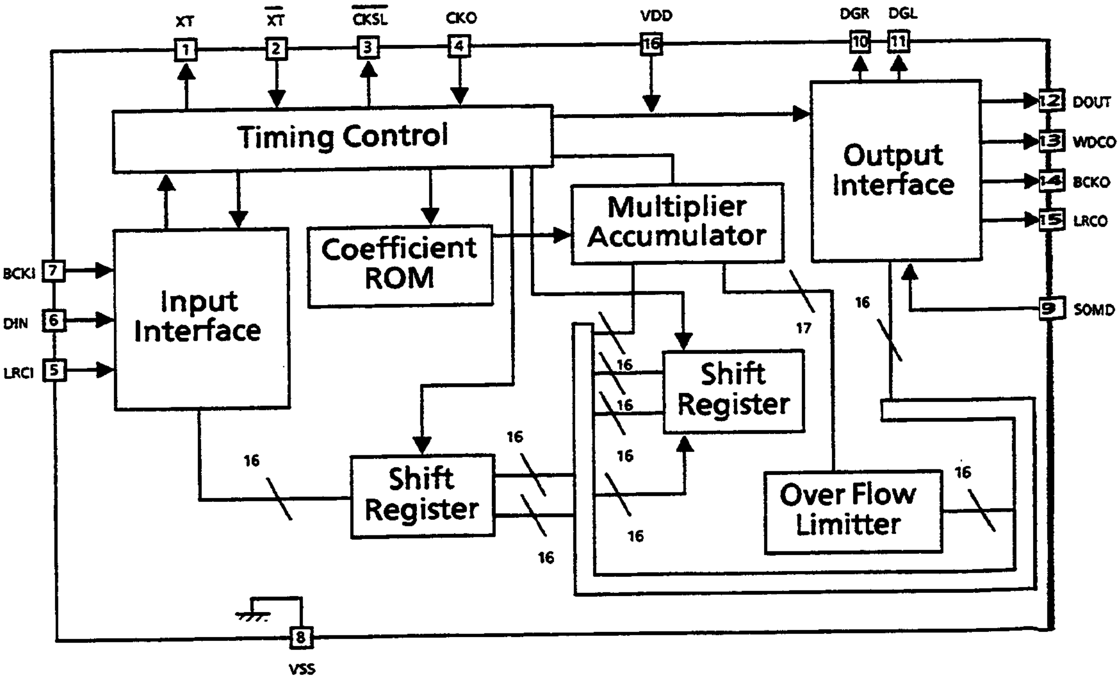
Pin No.	Symbol	I/O	Functions
1~6	P0~P5	I/O	Not used
7,8	AOTDF1 / AOTDF2	O	Audio serial data output.
9	DFBCK	O	Bit clock for AOTDF1 / AOTDF2 output.
10	DFWCK	O	Not used
11	$\overline{RAS}$	O	ROW ADDRESS STROBE : Signal output when accessing external D-RAM.
12	$\overline{CAS}$	O	COLUMN ADDRESS STROBE : Signal output when accessing external D-RAM.
13	$\overline{D\ READ}$	O	Data read signal output when accessing external D-RAM.
14	$\overline{D\ WRT}$	O	Data write signal output when accessing external D-RAM.
15,45	VDD	—	Power supply (+5V)
16	OSC1	I	External clock input. (384fs)
17	OSC2	O	Not used
18,48	VSS	—	Ground
19	FS3840	O	384fs output
20~27	D0~D7	I/O	Data input / output between external D-RAM and these pins.
28~36	A0~A8	O	Address output for external D-RAM.
37	BCK1	I	Bit clock for ASI 1 input.
38	BCK2	I/O	Bit clock for ASI 2 input.
39	ASI 1	I	Audio data serial input
40	ASI 2	I	Audio data serial input
41	LRCKO	O	L/R channel selectable signal output.(L:R-ch , H:L-ch)
42	LRCKI	I	L/R channel selectable signal input.(L:R-ch , H:L-ch)
43	$\overline{SEL}$	I	Oscillator selectable signal input. (L:external , H:internal)
44	TEST 5	O	Output for TEST.
46	$\overline{RES}$	I	Reset input
47	$\overline{INT}$	I	Interrupt request signal input.
49~52	TEST1~TEST4	I	Input for test. Connect to ground.
53	AOBCK	O	Bit clock for ASO output
54	ASO	O	Audio data serial output
55	AOWCK	O	Not used
56	SO	O	Not used
57	SOCK	I	Not used
58	$\overline{SORQ}$	I	Request signal input for serial output
59	$\overline{SOAK}$	O	Not used
60	SI	I	Serial data input from control micro computer.
61	$\overline{SICK}$	I	Serial clock input for SI input.
62	$\overline{SIRQ}$	I	Request signal input for serial input.
63	$\overline{SIAK}$	O	Signal output which indicates that the serial input is on the execution.
64	$\overline{SRDY}$	I	Ready signal input which indicates that the serial data input from control micro computer is an end.

Internal Block Diagram of Other ICs

■ SM5818AS (IC655) : Digital Filter

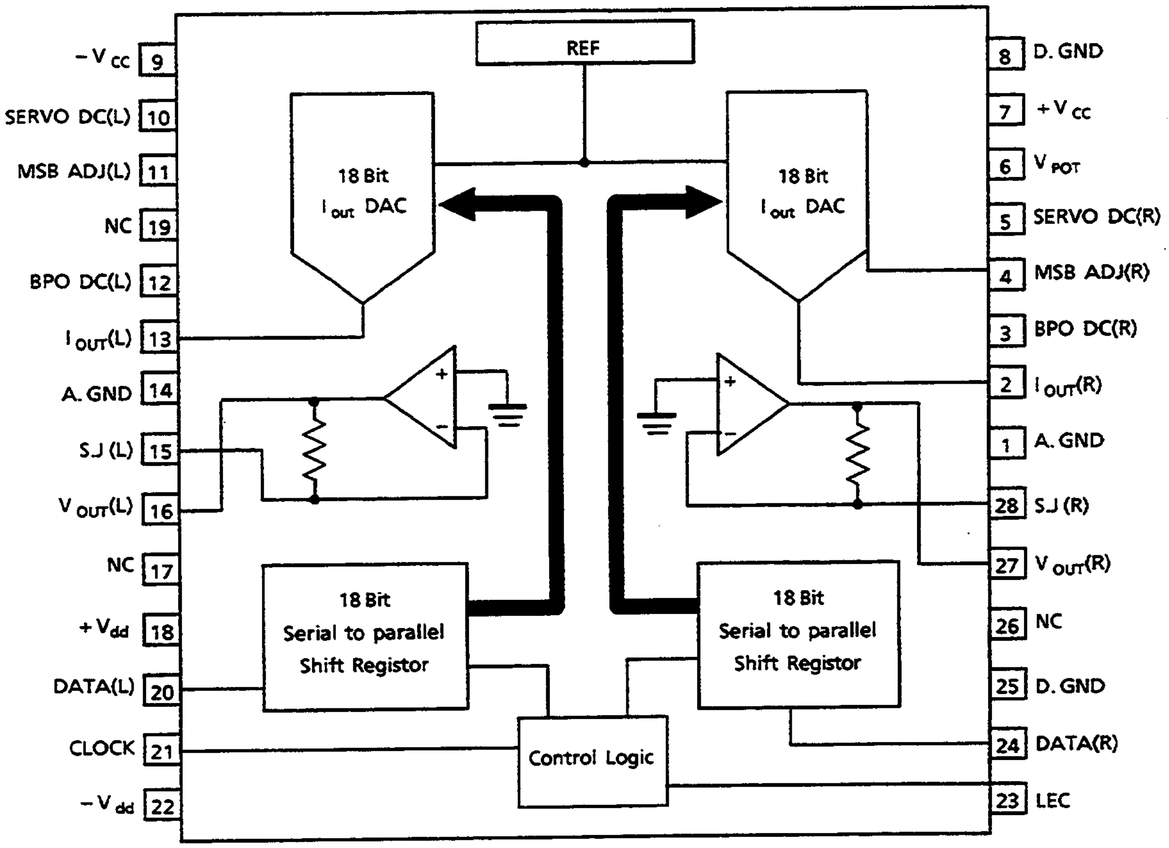

OMOD1
OMOD2
13
21
16
Filter Alithmetic Circuit
20
BCKI
11
DIN
10
LRCI
9
Input Interface
Output Interface
23
BCKO
22
WDCO
16
DGR
15
DGL
14
DG
System Clock
Timing Control
3
1
2
4
CKSL
XT
XT
CKO
24
12
VDD
VSS

■ SM5807FS (IC656) : Digital Filter


XT
XT
CKSL
CKO
VDD
DGR
DGL
1
2
3
4
16
10
11
Timing Control
Output Interface
12
DOUT
13
WDCO
14
BCKO
15
LRCO
9
SOMD
BCKI
7
DIN
6
LRCI
5
Input Interface
Coefficient ROM
Multiplier Accumulator
17
16
Shift Register
16
16
16
Shift Register
16
16
16
16
Over Flow Limitter
16
8
VSS

■ PCM1700U (IC657) : Digital to Analog Converter

1 . Block Diagram

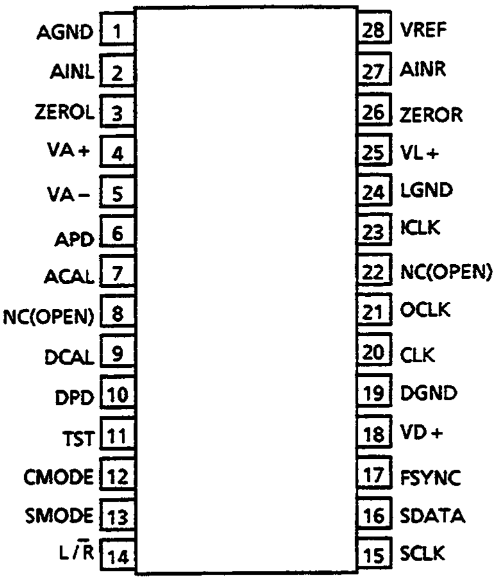

$-V_{CC}$ 9
SERVO DC(L) 10
MSB ADJ(L) 11
NC 19
BPO DC(L) 12
I_{OUT}(L) 13
A. GND 14
S.J (L) 15
V_{OUT}(L) 16
NC 17
$+V_{dd}$ 18
DATA(L) 20
CLOCK 21
$-V_{dd}$ 22
REF
18 Bit I_{out} DAC
18 Bit I_{out} DAC
18 Bit Serial to parallel Shift Registor
18 Bit Serial to parallel Shift Registor
Control Logic
8 D. GND
7 $+V_{CC}$
6 V_{POT}
5 SERVO DC(R)
4 MSB ADJ(R)
3 BPO DC(R)
2 I_{OUT}(R)
1 A. GND
28 S.J (R)
27 V_{OUT}(R)
26 NC
25 D. GND
24 DATA(R)
23 LEC

2 . Pin Functions

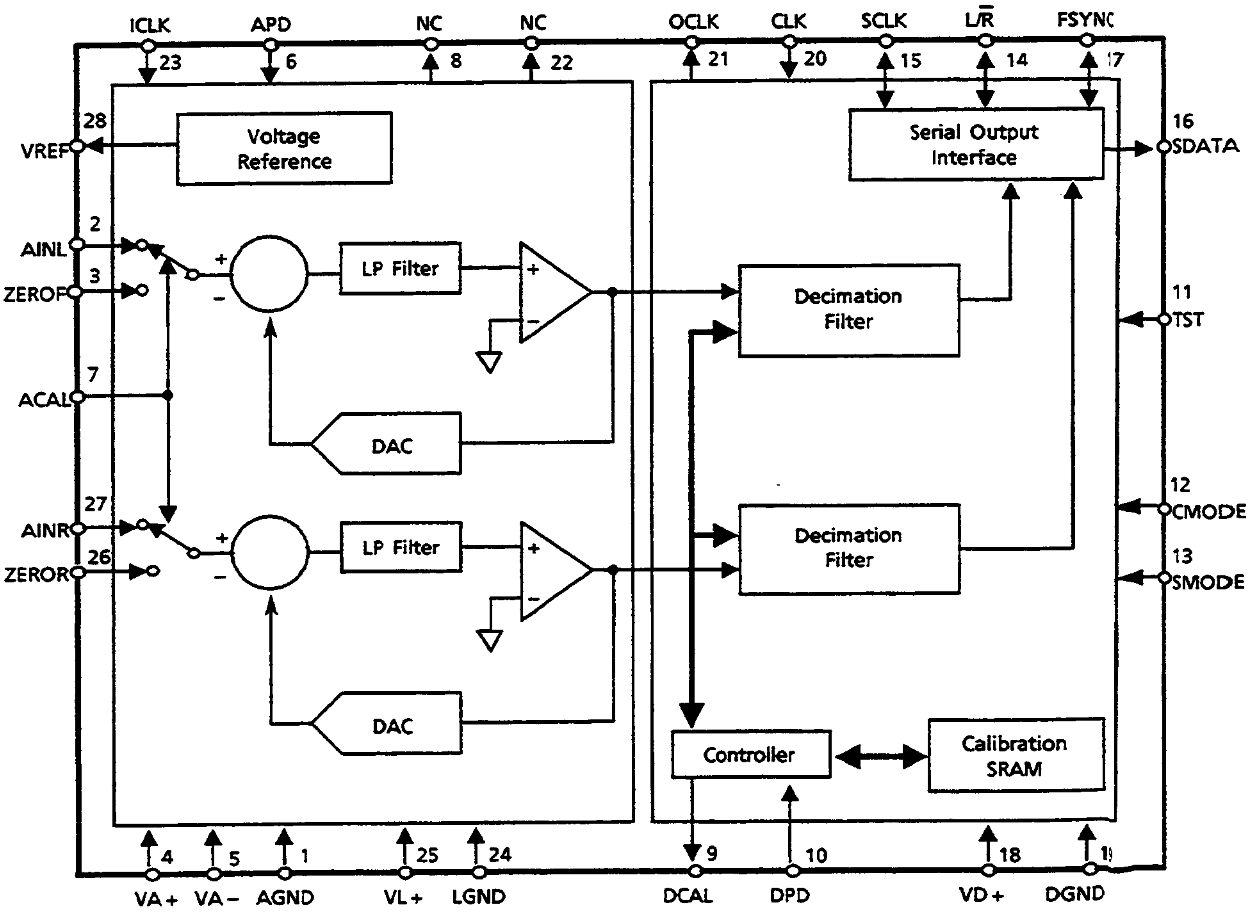
Pin No.	Symbol	Functions	Pin No.	Symbol	Functions
1	A. GND	Analog ground	15	S. J(L)	Feedback terminal (L ch)
2	I_{OUT}(R)	Current output (R ch)	16	V_{OUT}(L)	Voltage output (L ch)
3	BPO DC(R)	Offset filter (R ch)	17	NC	Non connection
4	MSB ADJ(R)	MSB adjustment (R ch)	18	$+V_{dd}$	Power supply for digital circuit
5	SERVO DC(R)	Servo filter (R ch)	19	NC	Non connection
6	V_{POT}	Reference voltage output for MSB adjustment.	20	DATA(L)	Data input (L ch)
7	$+V_{CC}$	Power supply for analog circuit	21	CLOCK	Clock input
8	D. GND	Digital ground	22	$-V_{dd}$	Power supply for digital circuit
9	$-V_{CC}$	Power supply for analog circuit	23	LEC	Latch enable control input
10	SERVO DC(L)	Servo filter (L ch)	24	DATA(R)	Data input (R ch)
11	MSB ADJ(L)	MSB adjustment (L ch)	25	D. GND	Digital ground
12	BPO DC(L)	Offset filter (L ch)	26	NC	Non connection
13	I_{OUT}(L)	Current output (L ch)	27	V_{OUT}(R)	Voltage output (R ch)
14	A. GND	Analog ground	28	S.J (R)	Feedback terminal (R ch)

■ CS5339-KP (IC654) : Analog to Digital Converter

1. Terminal layout

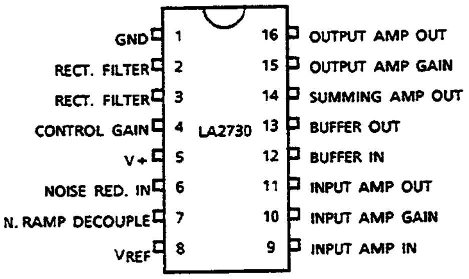

AGND 1
AINL 2
ZEROL 3
VA+ 4
VA− 5
APD 6
ACAL 7
NC(OPEN) 8
DCAL 9
DPD 10
TST 11
CMODE 12
SMODE 13
L/$\overline{R}$ 14
28 VREF
27 AINR
26 ZEROR
25 VL+
24 LGND
23 ICLK
22 NC(OPEN)
21 OCLK
20 CLK
19 DGND
18 VD+
17 FSYNC
16 SDATA
15 SCLK

2. Block diagram

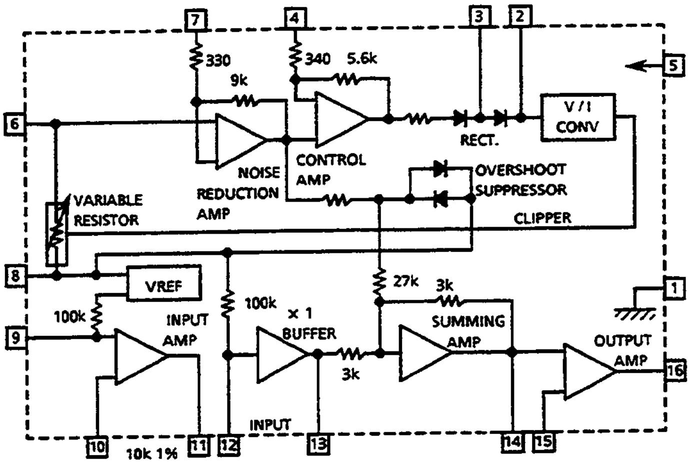

ICLK 23
APD 6
NC 8
NC 22
OCLK 21
CLK 20
SCLK 15
L/$\overline{R}$ 14
FSYNC 17
28 VREF
Voltage Reference
2 AINL
3 ZEROL
7 ACAL
27 AINR
26 ZEROR
LP Filter
DAC
LP Filter
DAC
Serial Output Interface
16 SDATA
Decimation Filter
11 TST
Decimation Filter
12 CMODE
13 SMODE
Controller
Calibration SRAM
4 VA+
5 VA−
1 AGND
25 VL+
24 LGND
9 DCAL
10 DPD
18 VD+
19 DGND

■ LA2730 (IC505) : Dolby B type Noise Reduction

1. Terminal Layout

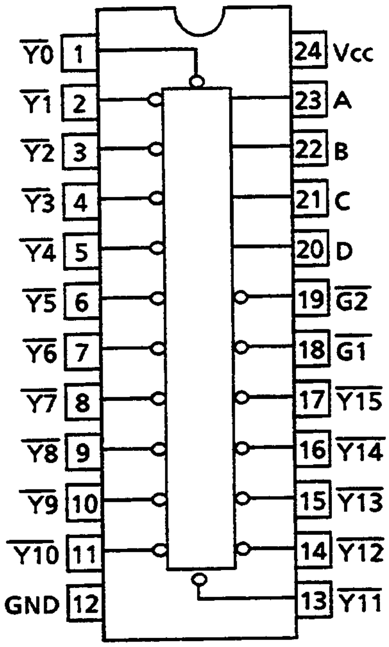

GND 1
RECT. FILTER 2
RECT. FILTER 3
CONTROL GAIN 4
V+ 5
NOISE RED. IN 6
N. RAMP DECOUPLE 7
VREF 8
LA2730
16 OUTPUT AMP OUT
15 OUTPUT AMP GAIN
14 SUMMING AMP OUT
13 BUFFER OUT
12 BUFFER IN
11 INPUT AMP OUT
10 INPUT AMP GAIN
9 INPUT AMP IN

2. Block Diagram


7
4
3
2
5
6
8
9
1
16
10
11
12
13
14
15
330
340
5.6k
9k
V/I CONV
RECT.
NOISE REDUCTION AMP
CONTROL AMP
OVERSHOOT SUPPRESSOR
CLIPPER
VARIABLE RESISTOR
VREF
100k
INPUT AMP
100k
x 1 BUFFER
27k
3k
3k
SUMMING AMP
OUTPUT AMP
INPUT
10k 1%

■ TC74HC154AP (IC901) : Decorder

1. Terminal layout & Block diagram


$\overline{Y0}$ 1
$\overline{Y1}$ 2
$\overline{Y2}$ 3
$\overline{Y3}$ 4
$\overline{Y4}$ 5
$\overline{Y5}$ 6
$\overline{Y6}$ 7
$\overline{Y7}$ 8
$\overline{Y8}$ 9
$\overline{Y9}$ 10
$\overline{Y10}$ 11
GND 12
24 Vcc
23 A
22 B
21 C
20 D
19 $\overline{G2}$
18 $\overline{G1}$
17 $\overline{Y15}$
16 $\overline{Y14}$
15 $\overline{Y13}$
14 $\overline{Y12}$
13 $\overline{Y11}$

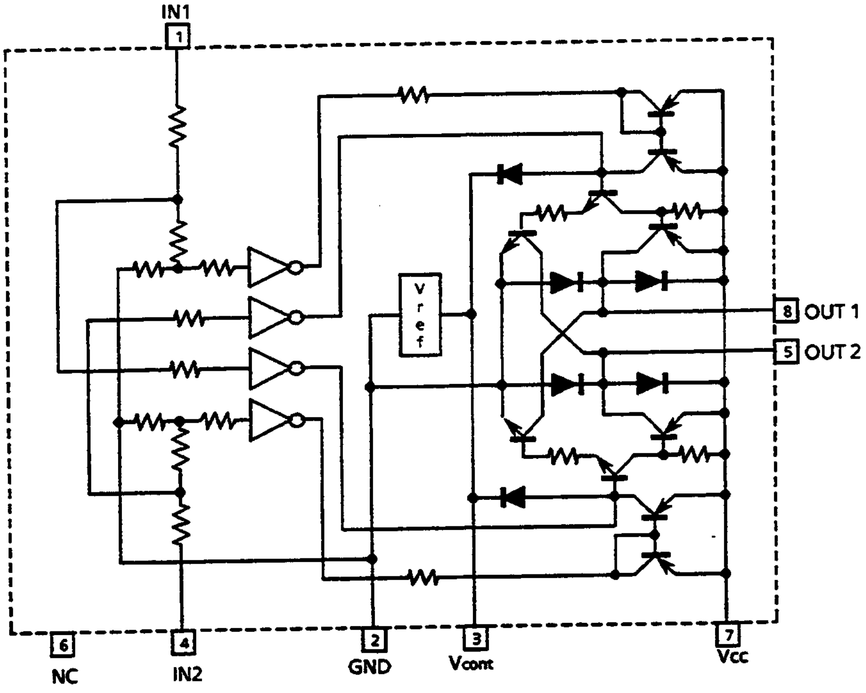
2. Functions table

Input						Selected Output
$\overline{G1}$	$\overline{G2}$	D	C	B	A	
L	L	L	L	L	L	$\overline{Y0}$
L	L	L	L	L	H	$\overline{Y1}$
L	L	L	L	H	L	$\overline{Y2}$
L	L	L	L	H	H	$\overline{Y3}$
L	L	L	H	L	L	$\overline{Y4}$
L	L	L	H	L	H	$\overline{Y5}$
L	L	L	H	H	L	$\overline{Y6}$
L	L	L	H	H	H	$\overline{Y7}$
L	L	H	L	L	L	$\overline{Y8}$
L	L	H	L	L	H	$\overline{Y9}$
L	L	H	L	H	L	$\overline{Y10}$
L	L	H	L	H	H	$\overline{Y11}$
L	L	H	H	L	L	$\overline{Y12}$
L	L	H	H	L	H	$\overline{Y13}$
L	L	H	H	H	L	$\overline{Y14}$
L	L	H	H	H	H	$\overline{Y15}$
×	H	×	×	×	×	NONE
H	×	×	×	×	×	NONE

× : Don't care

LB1639-CV (IC514) : Motor Driver

1. Block Diagram

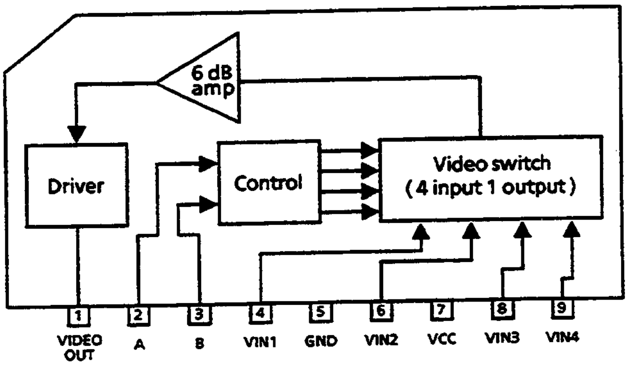

IN1
1
V
r
e
f
8 OUT 1
5 OUT 2
6
NC
4
IN2
2
GND
3
Vcont
7
Vcc

2. Functions table

IN 1	IN 2	OUT 1	OUT 2	MOTOR
H	L	H	L	CLOCKWISE
L	H	L	H	COUNTER-CLOCKWISE
H	H	OFF	OFF	WAITING
L	L	OFF	OFF	WAITING

LA7952 (IC600) : Video Switch with 6 dB amp.

1. Terminal Layout & Block Diagram

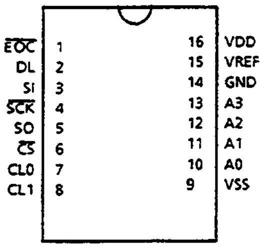

6 dB amp
Driver
Control
Video switch (4 input 1 output)
1
VIDEO OUT
2
A
3
B
4
VIN1
5
GND
6
VIN2
7
VCC
8
VIN3
9
VIN4

2. Pin functions

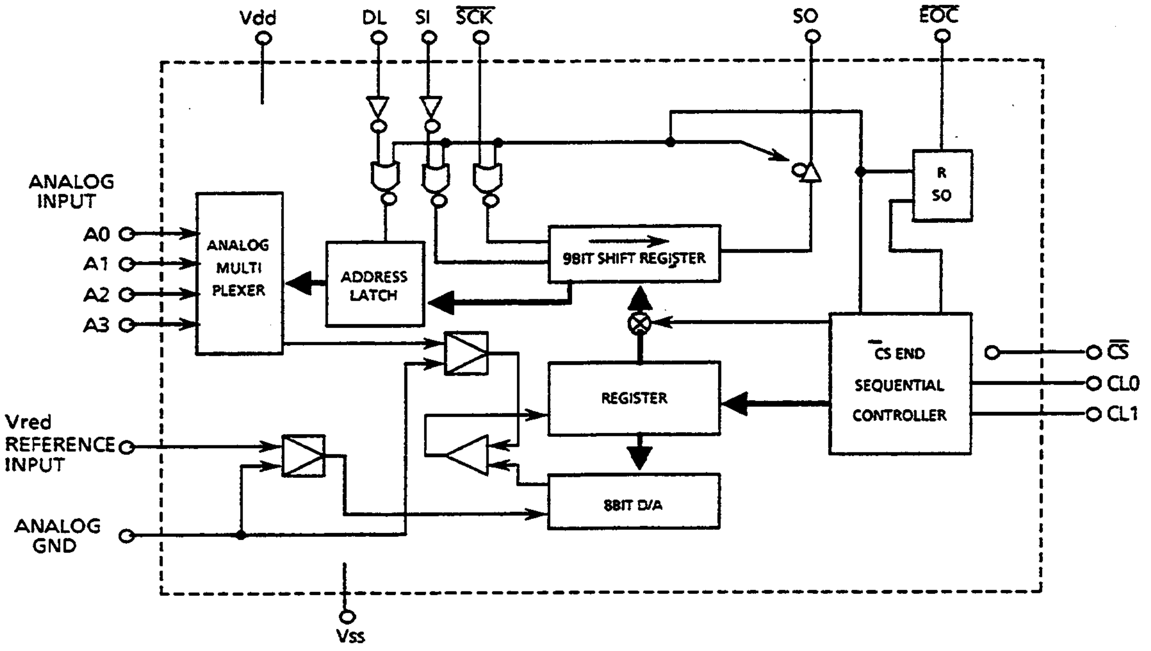
S2 (2 pin)	S3 (3 pin)	VIN1 (4 pin)	VIN2 (6 pin)	VIN3 (8 pin)	VIN4 (9 pin)
H	H	ON	OFF	OFF	OFF
L	H	OFF	ON	OFF	ON
H	L	OFF	OFF	ON	OFF
L	L	OFF	OFF	OFF	ON

■ µPD7001C (IC906) : Analog to Digital Converter

1. Terminal Layout

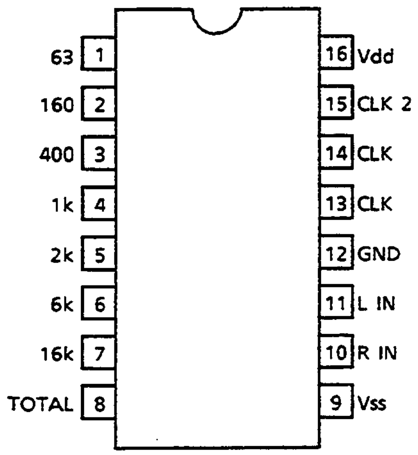

$\overline{EOC}$ 1
DL 2
SI 3
$\overline{SCK}$ 4
SO 5
$\overline{CS}$ 6
CL0 7
CL1 8
16 VDD
15 VREF
14 GND
13 A3
12 A2
11 A1
10 A0
9 VSS

2. Block Diagram


Vdd
DL
SI
$\overline{SCK}$
SO
$\overline{EOC}$
ANALOG INPUT
A0
A1
A2
A3
ANALOG MULTI PLEXER
ADDRESS LATCH
9BIT SHIFT REGISTER
R SO
REGISTER
8BIT D/A
$\overline{CS}$ END SEQUENTIAL CONTROLLER
$\overline{CS}$
CL0
CL1
Vred REFERENCE INPUT
ANALOG GND
Vss

■ XR1091DCP (IC907) : Display Filter

1. Terminal Layout


63 1
160 2
400 3
1k 4
2k 5
6k 6
16k 7
TOTAL 8
16 Vdd
15 CLK 2
14 CLK
13 CLK
12 GND
11 L IN
10 R IN
9 Vss

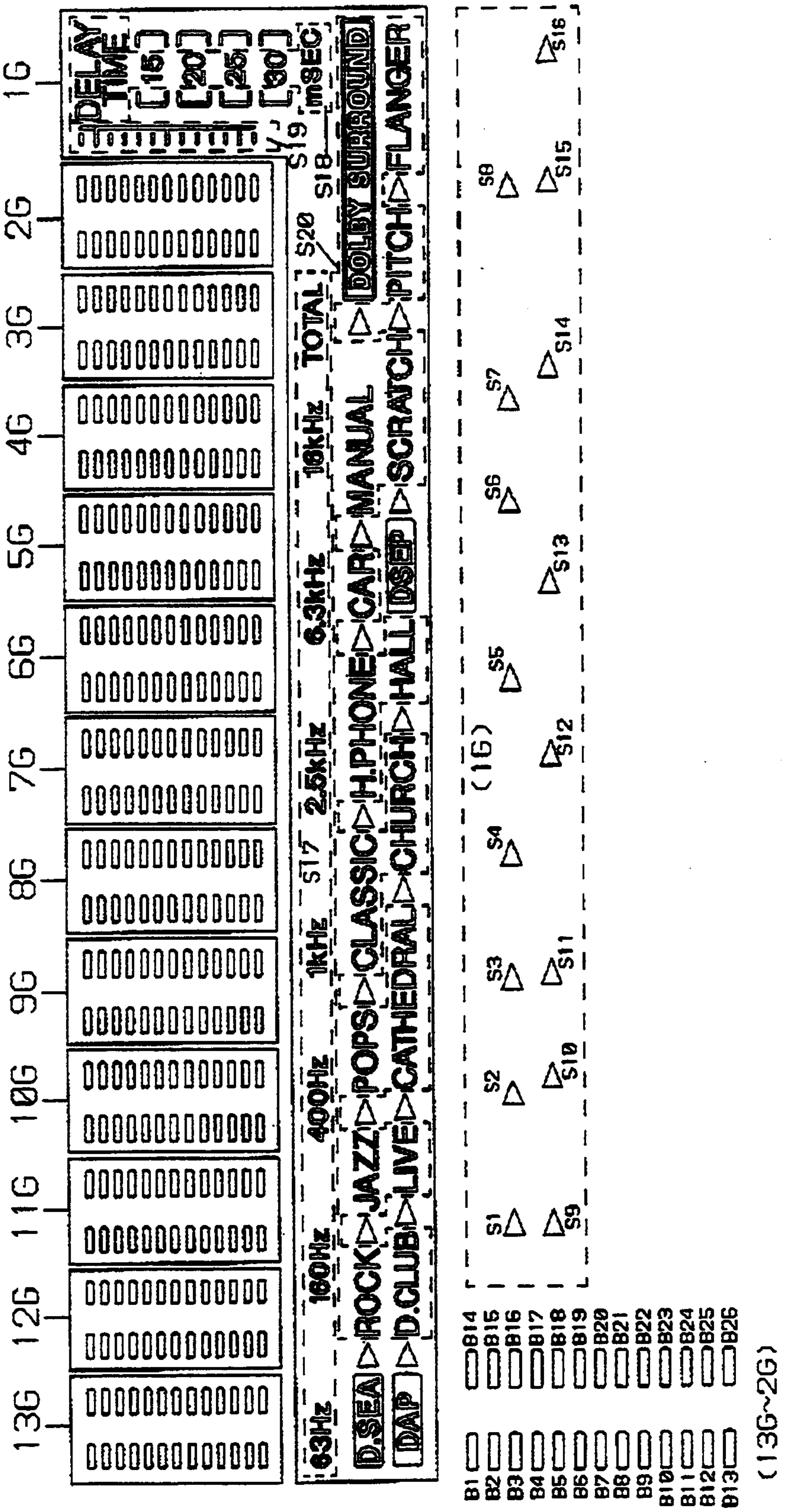
2. Pin functions

Pin No.	Symbol	Descriptions
1	63	Peak hold output of 63Hz band-pass filter
2	160	Peak hold output of 160Hz band-pass filter
3	400	Peak hold output of 400Hz band-pass filter
4	1k	Peak hold output of 1kHz band-pass filter
5	2k	Peak hold output of 2kHz band-pass filter
6	6k	Peak hold output of 6kHz band-pass filter
7	16k	Peak hold output of 16Hz band-pass filter
8	TOTAL	Total frequency output (peak hold)
9	Vss	Power supply (-6V)
10	R IN	Right channel input
11	L IN	Left channel input : Connecting to ground
12	GND	Ground terminal
13	CLK	Connecting capacitor for clock
14	CLK	Connecting resistor to pin 13 for clock
15	CLK / 2	1/2 clock output
16	Vdd	Power supply (+ 6V)

Internal wiring of the FL Display

■ FL901 : ELU0001-123

1. Grid Layout


1G
2G
3G
4G
5G
6G
7G
8G
9G
10G
11G
12G
13G
DELAY
TIME
15
20
25
30
mSEC
S19
S18
S20
TOTAL
16kHz
6.3kHz
2.5kHz
S17
1kHz
400Hz
160Hz
63Hz
DOLBY SURROUND
D.SEA
ROCK
JAZZ
POPS
CLASSIC
H.PHONE
CAR
MANUAL
DAP
D.CLUB
LIVE
CATHEDRAL
CHURCH
HALL
DSEP
SCRATCH
PITCH
FLANGER
S1
S2
S3
S4
S5
S6
S7
S8
S9
S10
S11
S12
S13
S14
S15
S16
(1G)
B1
B2
B3
B4
B5
B6
B7
B8
B9
B10
B11
B12
B13
B14
B15
B16
B17
B18
B19
B20
B21
B22
B23
B24
B25
B26
(13G~2G)

2. Pin Connections

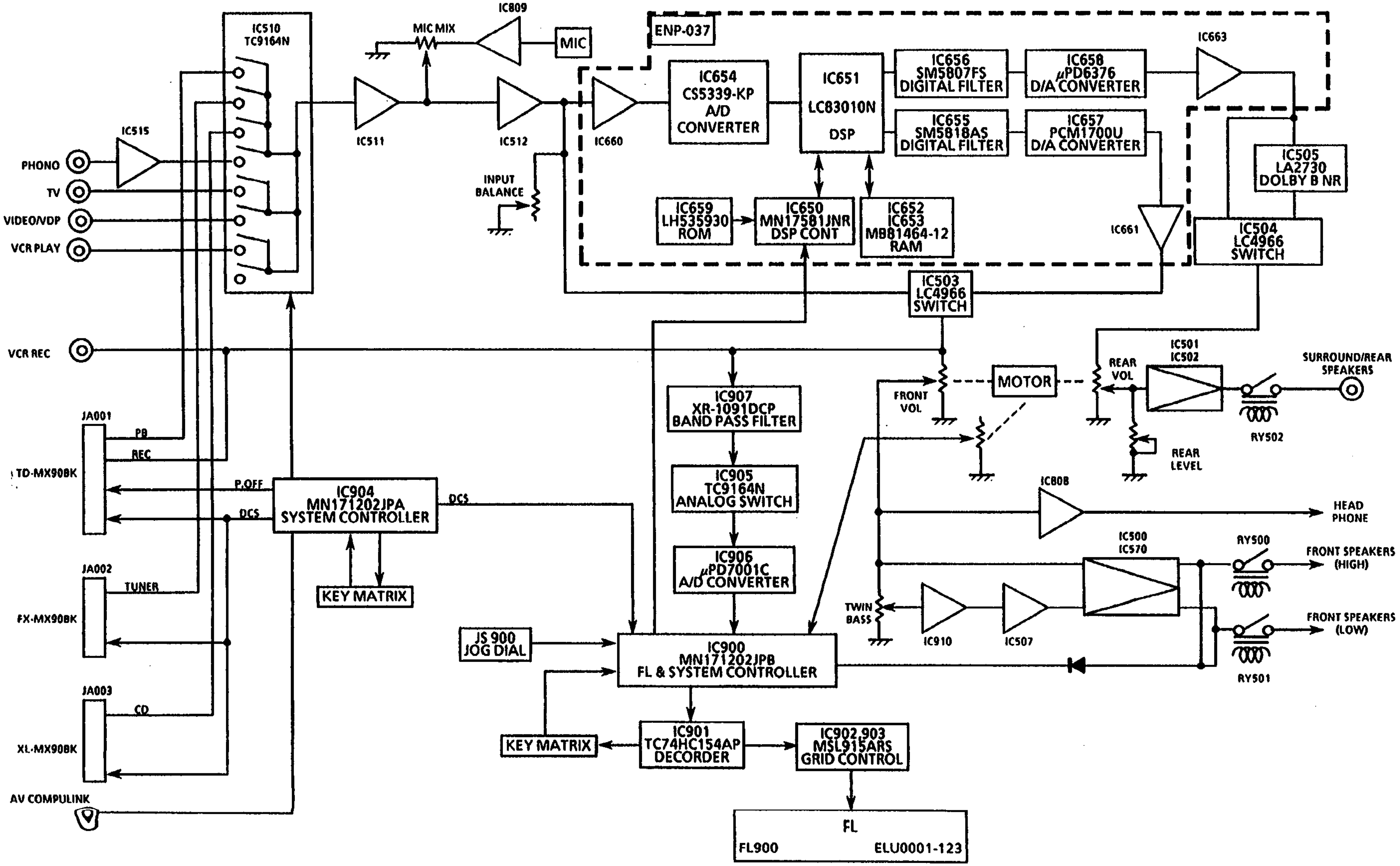
PIN NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
CONNECTION	F1	F1	NP	NP	P26	P25	P24	P23	P22	P21	P20	P19	P18	P17	P16	P15	P14	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12

PIN NO.	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57
CONNECTION	P13	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G	12G	13G	NP	NP	F2	F2

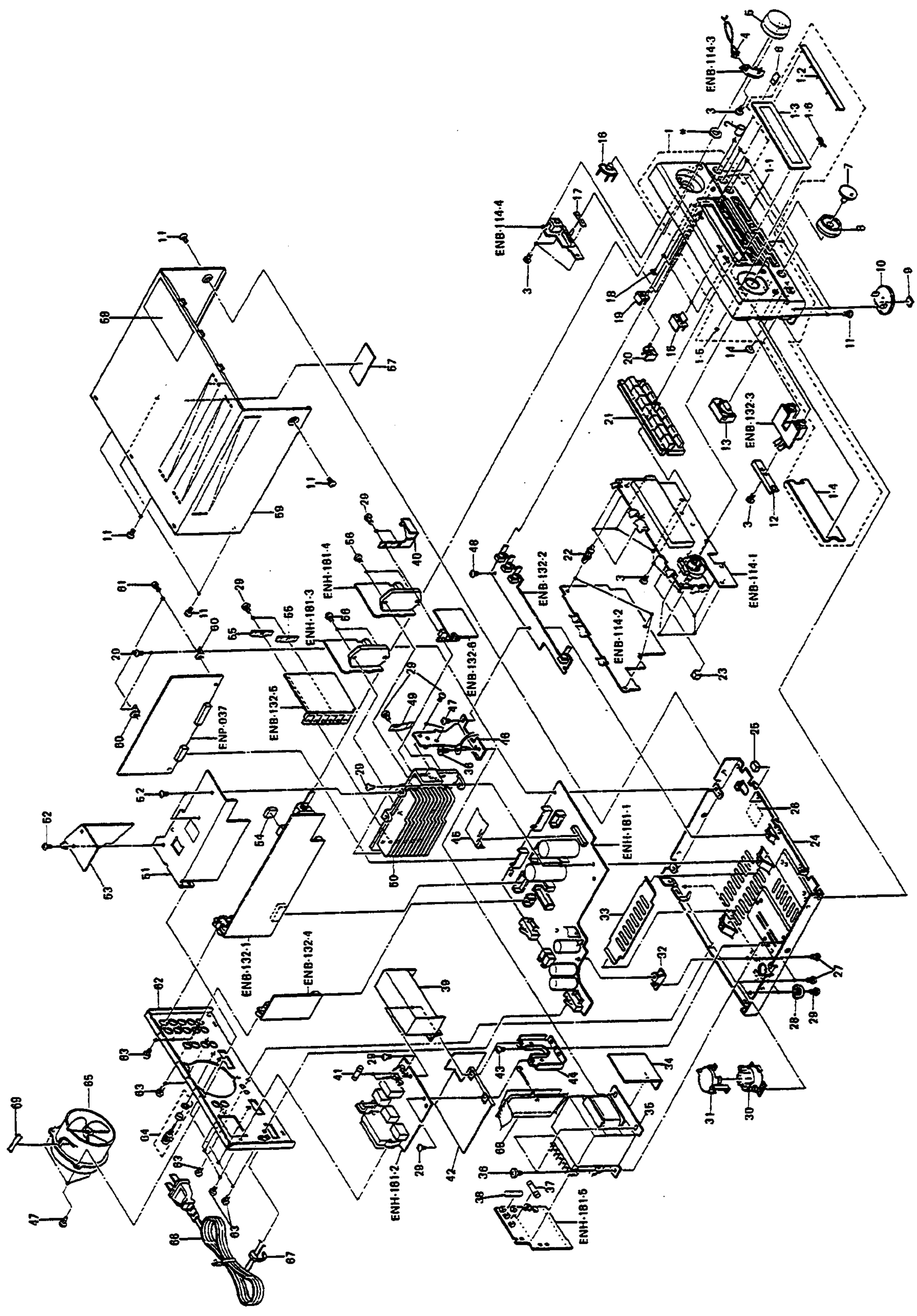
3. Grid-Anode Connections

	13G	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	D.SEA
P2	B2	B2	B2	B2	B2	B2	B2	B2	B2	B2	B2	B2	S1
P3	B3	B3	B3	B3	B3	B3	B3	B3	B3	B3	B3	B3	S2
P4	B4	B4	B4	B4	B4	B4	B4	B4	B4	B4	B4	B4	S3
P5	B5	B5	B5	B5	B5	B5	B5	B5	B5	B5	B5	B5	S4
P6	B6	B6	B6	B6	B6	B6	B6	B6	B6	B6	B6	B6	S5
P7	B7	B7	B7	B7	B7	B7	B7	B7	B7	B7	B7	B7	S6
P8	B8	B8	B8	B8	B8	B8	B8	B8	B8	B8	B8	B8	S7
P9	B9	B9	B9	B9	B9	B9	B9	B9	B9	B9	B9	B9	DAP DSEP
P10	B10	B10	B10	B10	B10	B10	B10	B10	B10	B10	B10	B10	S9
P11	B11	B11	B11	B11	B11	B11	B11	B11	B11	B11	B11	B11	S10
P12	B12	B12	B12	B12	B12	B12	B12	B12	B12	B12	B12	B12	S11
P13	B13	B13	B13	B13	B13	B13	B13	B13	B13	B13	B13	B13	S12
P14	B14	B14	B14	B14	B14	B14	B14	B14	B14	B14	B14	B14	S13
P15	B15	B15	B15	B15	B15	B15	B15	B15	B15	B15	B15	B15	S14
P16	B16	B16	B16	B16	B16	B16	B16	B16	B16	B16	B16	B16	S15
P17	B17	B17	B17	B17	B17	B17	B17	B17	B17	B17	B17	B17	S8
P18	B18	B18	B18	B18	B18	B18	B18	B18	B18	B18	B18	B18	S16
P19	B19	B19	B19	B19	B19	B19	B19	B19	B19	B19	B19	B19	S17
P20	B20	B20	B20	B20	B20	B20	B20	B20	B20	B20	B20	B20	S20
P21	B21	B21	B21	B21	B21	B21	B21	B21	B21	B21	B21	B21	[ ](15)
P22	B22	B22	B22	B22	B22	B22	B22	B22	B22	B22	B22	B22	[ ](20)
P23	B23	B23	B23	B23	B23	B23	B23	B23	B23	B23	B23	B23	[ ](25)
P24	B24	B24	B24	B24	B24	B24	B24	B24	B24	B24	B24	B24	[ ](30)
P25	B25	B25	B25	B25	B25	B25	B25	B25	B25	B25	B25	B25	S19
P26	B26	B26	B26	B26	B26	B26	B26	B26	B26	B26	B26	B26	S18

Block Diagram


IC510
TC9164N
IC515
PHONO
TV
VIDEO/VDP
VCR PLAY
VCR REC
JA001
PB
REC
TD-MX90BK
JA002
TUNER
FX-MX90BK
JA003
CD
XL-MX90BK
AV COMPULINK
IC511
MIC MIX
IC809
MIC
IC512
INPUT BALANCE
ENP-037
IC660
IC654
CS5339-KP
A/D CONVERTER
IC651
LC83010N
DSP
IC656
SM5807FS
DIGITAL FILTER
IC655
SM5818AS
DIGITAL FILTER
IC658
µPD6376
D/A CONVERTER
IC657
PCM1700U
D/A CONVERTER
IC663
IC659
LH535930
ROM
IC650
MN17581JNR
DSP CONT
IC652
IC653
MB81464-12
RAM
IC661
IC505
LA2730
DOLBY B NR
IC504
LC4966
SWITCH
IC503
LC4966
SWITCH
IC501
IC502
REAR VOL
SURROUND/REAR SPEAKERS
RY502
REAR LEVEL
MOTOR
FRONT VOL
IC907
XR-1091DCP
BAND PASS FILTER
IC905
TC9164N
ANALOG SWITCH
IC906
µPD7001C
A/D CONVERTER
IC808
HEAD PHONE
IC500
IC570
RY500
FRONT SPEAKERS (HIGH)
FRONT SPEAKERS (LOW)
RY501
TWIN BASS
IC910
IC507
P.OFF
DCS
IC904
MN171202JPA
SYSTEM CONTROLLER
KEY MATRIX
JS 900
JOG DIAL
IC900
MN171202JPB
FL & SYSTEM CONTROLLER
IC901
TC74HC154AP
DECORDER
KEY MATRIX
IC902,903
MSL915ARS
GRID CONTROL
FL
FL900
ELU0001-123

General Exploded View and Parts List


ENB-114-3
ENB-114-4
ENB-132-3
ENB-114-1
ENB-114-2
ENB-132-2
ENH-181-4
ENH-181-3
ENB-132-6
ENB-132-5
ENP-037
ENH-181-1
ENB-132-1
ENB-132-4
ENH-181-2
ENH-181-5
1-1
1-2
1-3
1-4
1-5
1-6

*mark Indicates attached part.

PARTS LIST

Contents

General Exploded View and Parts List 2-2
Printed Circuit Board Ass'y and Parts List 2-5
■ENH-181☐Front Amplifier & Power Primary PC Board Ass'y 2-5
■ENB-132☐Rear Amplifier & Source Select PC Board Ass'y 2-9
■ENP-037☐DAP PC Board Ass'y 2-12
■ENB-114☐System & FL Control PC Board Ass'y 2-14

■ Parts List

⚠	Item	Part Number	Part Name	Q'ty	Description	Areas
	1	EFP-AXMX90BKE (S	Front Panel Ass'y	1		
	1-1	E102337-004	Front Panel	1		
	1-2	E306922-004	Fitting	1		
	1-3	E306980-002	Window Screen	1		
	1-4	E406633-001	FL Screen	1		
	1-5	E60912-003	Speed Nut	1		
	1-6	PQ42561	JVC Mark	1		
	2	E306921-001	Knob	4	MIXING	
	3	SDSF2608Z	Screw	15		
	4	EWS142-024	Socket Wire Ass'y	1		
	5	E306979-001	Volume Knob	1		
	6	E406160-001	Slide Knob	1	BALANCE	
	7	E306982-002	Jog Knob	1		
	8	E306983-001	Shuttle Knob	1		
	9	E75896-001	Spacer	2	for Foot (Front)	
	10	E306935-001	Foot	2	Front	
	11	SDSG3008M	Screw	11		
	12	E406159-001	Bracket	1		
	13	E306914-002	Push Button Ass'y	1	POWER	
	14	E406089-001	Indicator	1	STANDBY	
	15	E306916-002	Push Button	3	DAP	
	16	E406158-002	Remote Lens	1		
	17	E406337-001	Felt Spacer	1		
	18	E406091-001	Indicator	2		
	19	E306917-001	Push Button	1	AI	
	20	E306917-002	Push Button	1	DEMO	
	21	E206881-001	Push Button Ass'y	1	SOURCE	
	22	E307112-001	Fastener	3		
	23	E306805-032	Spacer	1		
	24	E102324-005	Chassis Base	1		Except U
		E102324-006	Chassis Base	1		U
	25	E306805-033	Spacer	1		
	26	E74925-001	Dolby Sheet	1		
	27	SBSG3008N	Screw	1		Except U
		SBSG3008N	Screw	3		U
	28	E47227-029	Foot	2	Rear	
	29	SBSG3010CC	Screw	16		
⚠	30	QSR0085-018	Voltage Selector	1		U
	—	E406658-002	Label	1	for Voltage Selector	U
	31	E302764-002	Voltage Selector Cover	1		U
	32	E68587-004	Circuit Board Bracket	1		
	33	E406638-001	Protect Sheet	1		
	34	E406377-002	Shield Cover	1		
⚠	35	ETP1150-42JA	Power Transformer	1		J,C
⚠		ETP1150-42FA	Power Transformer	1		U
⚠		ETP1150-42EA	Power Transformer	1		Except J,C,U,BS
⚠		ETP1150-42EABS	Power Transformer	1		BS
	36	E65389-004	Special Screw	4		
⚠	37	QMF51U1-4R0S	Fuse	1	F001	J,C
⚠		QMF51A2-2R5S	Fuse	1	F001	U
⚠		QMF51A2-1R25S	Fuse	1	F001	Except J,C,U,BS
⚠		QMF51E2-1R25SBS	Fuse	1	F001	BS
⚠	38	QMF51A2-1R25S	Fuse	1	F002	U
	39	E307662-002	Primary Cover	1		
	40	E406712-001	Leaf Bracket	1		
⚠	41	QMF51U1-2R5S	Fuse	2	F101, F102	J,C
⚠		QMF51A2-2R0S	Fuse	2	F101, F102	Except J,C,BS
⚠		QMF51E2-2R0SBS	Fuse	2	F101, F102	BS
	42	E307661-002	Protect Sheet	1		
	43	SBST3006CC	Screw	1		

⚠	Item	Part Number	Part Name	Q'ty	Description	Areas
	44	E307558-001	Circuit Board Bracket	1		
	45	EWR1XE-14TT	Flat Cable	1	FC900	
	46	E406636-002	Heat Sink Bracket	1		
	47	SBSG3008M	Screw	4		
	48	E49447-003	Shaft	1		
	49	E406271-001	Spring	1		
	50	E307563-002	Heat Sink	1		
	51	E307576-001	Heat Sink	1		
	52	SDSG3010M	Screw	3		
	53	E307663-002	Sheet	1		
	54	E306805-034	Spacer	1		
	55	E406092-001	Leaf Spring	2		
	56	SBSG3014CC	Screw	4		
	57	E306805-024	Spacer	1		
	58	E67000-017	Caution Label	1		
	59	E206809-007	Metal Cover	1		
	60	E406346-001	Bracket	2		
	61	E48729-008	Plastic Rivet	2		
	62	E206841-004	Rear Panel	1		J
		E206841-005	Rear Panel	1		C
		E206841-006	Rear Panel	1		U
		E206841-007	Rear Panel	1		A
		E206841-008	Rear Panel	1		E,EF,G,GI
		E206841-009	Rear Panel	1		BS
	63	E73273-003	Special Screw	12		
	64	E70078-003	GND Terminal	1		
	65	E206880-001	Fan Ass'y	1		
⚠	66	QMP1D00-200H	Power Cord	1		J,C
⚠		QMP2560-244	Power Cord	1		A
⚠		QMP3900-200	Power Cord	1		E,EF,G,GI
⚠		QMP7520-200	Power Cord	1		U
⚠		QMP9017-008BS	Power Cord	1		BS
⚠	67	QHS3876-162	Cord Stopper	1		Excpet BS
⚠		QHS3876-162BS	Cord Stopper	1		BS
	68	E406689-002	Sheet	1		
	69	EXO030006H10S11	Spacer	1		
	—	E307570-001	Number Label	1		J
		E61029-009	Number Label	1		Excpet J
	—	E75803-001	Fuse Caution Label	1		J
		E75804-001	Fuse Caution Label	1		C
	—	QZL1001-001	UL Label	1		J
	—	E45858-002	CSA Label	1		C
	—	E70028-001	Approval Label	1		E
	—	E74792-107	FTZ Label	1		G

⚠ Safety Parts

The Marks for Designated Areas

J——the U.S.A.	G——Germany
C——Canada	BS——the U.K.
A——Australia	GI——Italy
E,EF——Continental Europe	U——Universal Type

No mark indicates all areas.

Note (1)

PC Board Ass'y	Designated Areas
ENH-181 A	the U.S.A.
ENH-181 B	Canada
ENH-181 C	Universal Type
ENH-181 D	Continental Europe
ENH-181 E	Australia
ENH-181 F BS	the U.K.
ENH-181 G	Germany, Italy

Transistors

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	Q001	2SC1685(Q,R)	SILICON MATSUSHITA	
	Q004	2SC1685(Q,R)	SILICON MATSUSHITA	
	Q006	2SB1357(E,F)	SILICON ROHM	
	Q008	DTC114YS	SILICON ROHM	
	Q009	DTA144ES	SILICON ROHM	
	Q011	2SD1302(S,T)	SILICON MATSUSHITA	
	Q012	2SD1302(S,T)	SILICON MATSUSHITA	
	Q013	DTA114YS	SILICON ROHM	
	Q014	DTC144ES	SILICON ROHM	
	Q500	2SC1685(Q,R)	SILICON MATSUSHITA	
	Q501	2SC1685(Q,R)	SILICON MATSUSHITA	
	Q502	2SA733A(P,Q)	SILICON NEC	
	Q503	2SC1740(R,S)	SILICON ROHM	
	Q504	2SC1740S(R,S)	SILICON ROHM	
	Q505	2SC1740S(R,S)	SILICON ROHM	
	Q506	2SC1685(Q,R)	SILICON MATSUSHITA	
	Q507	2SC1685(Q,R)	SILICON MATSUSHITA	
	Q522	DTA144ES	SILICON ROHM	
	Q523	DTA144ES	SILICON ROHM	
	Q524	DTA144ES	SILICON ROHM	
	Q525	DTA144ES	SILICON ROHM	
	Q526	DTA144ES	SILICON ROHM	
	Q527	DTA144ES	SILICON ROHM	
	Q528	2SD2144S(VW)	SILICON ROHM	
	Q529	2SD2144S(VW)	SILICON ROHM	
	Q530	2SD2144S(VW)	SILICON ROHM	
	Q531	2SD2144S(VW)	SILICON ROHM	
	Q532	DTC144ES	SILICON ROHM	
	Q533	DTC144ES	SILICON ROHM	
	Q534	2SD2144S(VW)	SILICON ROHM	

△ : SAFETY PARTS

I.C.s.

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	IC500	STK4141MK5	I.C. SANYO	
	IC503	LC4966	I.C. SANYO	
	IC504	LC4966	I.C. SANYO	
	IC506	BA15218N	I.C. ROHM	
	IC507	VC4580L	I.C. DAINICHI	
	IC570	STK4141MK5	I.C. SANYO	

△ : SAFETY PARTS

Diodes

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	D003	1SS133	SILICON ROHM	
	D005	1SR139-200	SILICON ROHM	
	D009	MTZ6.8JC	ZENER ROHM	
	D010	1SR139-200	SILICON ROHM	
	D011	1SR139-200	SILICON ROHM	
	D012	MTZ30JC	ZENER ROHM	
	D016	1SR139-200	SILICON ROHM	
	D017	1SR139-200	SILICON ROHM	
	D018	1SR139-200	SILICON ROHM	
	D019	1SR139-200	SILICON ROHM	
	D020	1SR139-200	SILICON ROHM	
	D021	1SR139-200	SILICON ROHM	
△	D022	30DL2FC	SILICON NIHONINTER	
△	D023	30DL2FC	SILICON NIHONINTER	
△	D024	30DL2FC	SILICON NIHONINTER	
△	D025	30DL2FC	SILICON NIHONINTER	
	D028	1SR139-200	SILICON ROHM	
	D031	1SS133	SILICON ROHM	
	D039	MTZ6.8JC	ZENER ROHM	
	D501	1SS133	SILICON ROHM	

△ : SAFETY PARTS

Diodes

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	D502	1SS133	SILICON ROHM	
	D503	1SS133	SILICON ROHM	
	D504	1SS133	SILICON ROHM	
	D505	1SS133	SILICON ROHM	
	D506	1SS133	SILICON ROHM	
	D508	1SS133	SILICON ROHM	
	D509	MTZ9.1JC	ZENER ROHM	
	D510	1SS133	SILICON ROHM	
	D511	1SR139-200	SILICON ROHM	
	D512	1SR139-200	SILICON ROHM	
	D521	1SS133	SILICON ROHM	
	D522	1SS133	SILICON ROHM	
	D523	1SS133	SILICON ROHM	
	D524	1SS133	SILICON ROHM	
	D525	MTZ7.5JC	ZENER ROHM	
	D527	1SS133	SILICON ROHM	
	D571	1SS133	SILICON ROHM	
	D572	1SS133	SILICON ROHM	
	D573	MTZ15JC	ZENER ROHM	
	D574	MTZ15JC	ZENER ROHM	
	D575	MTZ9.1JC	ZENER ROHM	B
	D575	MTZ9.1JC	ZENER ROHM	C
	D575	MTZ9.1JC	ZENER ROHM	D
	D575	MTZ9.1JC	ZENER ROHM	E
	D575	MTZ9.1JC	ZENER ROHM	FBS
	D575	MTZ9.1JC	ZENER ROHM	G
	D580	1SS133	SILICON ROHM	
	D581	1SS133	SILICON ROHM	
	D582	1SS133	SILICON ROHM	
	D583	1SS133	SILICON ROHM	
	D584	1SS133	SILICON ROHM	
	D585	1SS133	SILICON ROHM	

△ : SAFETY PARTS

Capacitors

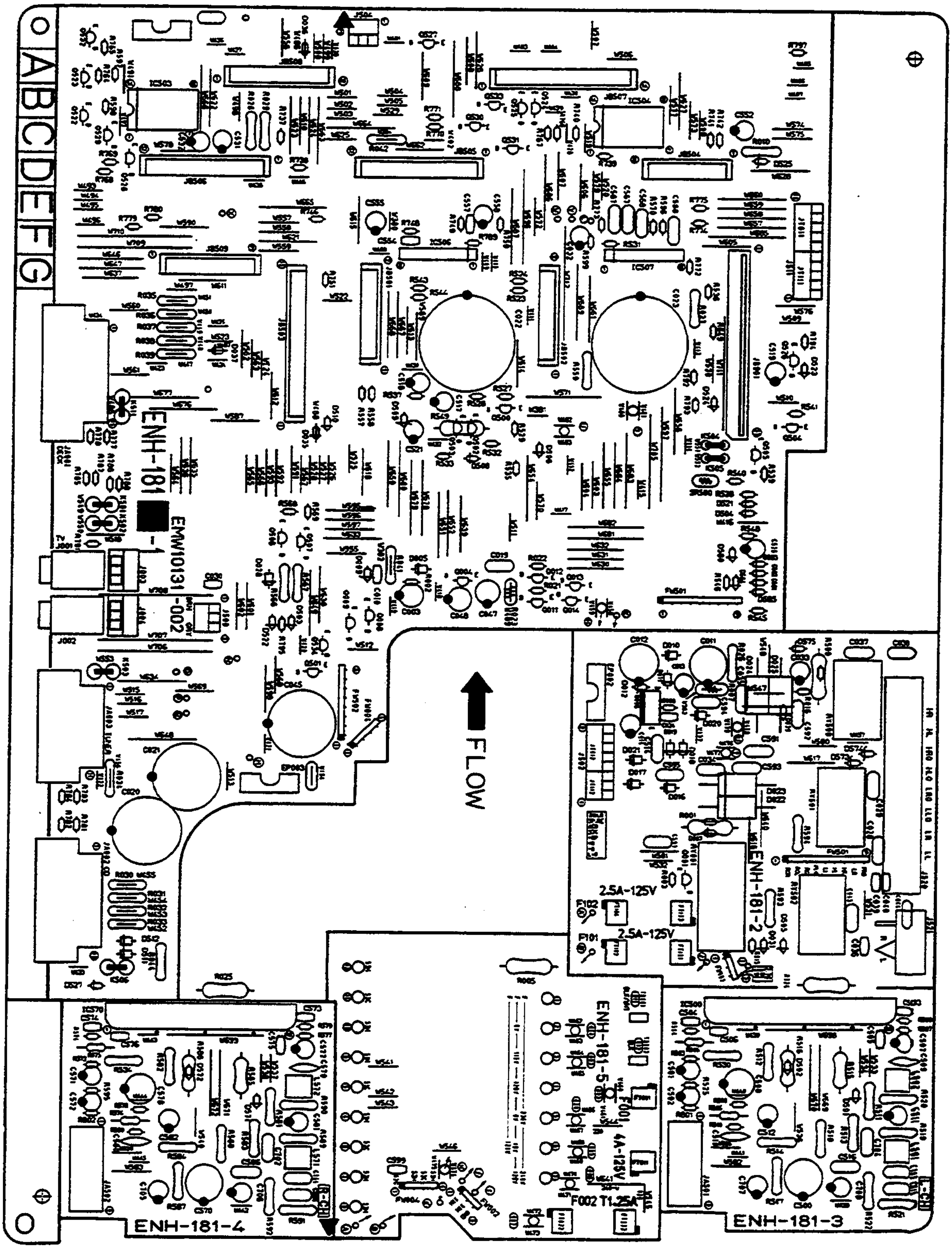
△	ITEM	PART NUMBER	DESCRIPTION	AREA
	C003	QEK51HM-106	10MF 50V ELECTRO	
	C010	QCVB1CM-103	0.01MF 16V CERAMIC	
	C011	QETB1HM-227	220MF 50V ELECTRO	
	C012	QETB1JM-227	220MF 63V ELECTRO	
	C013	QETB1HM-226	22MF 50V ELECTRO	
	C014	QETB1HM-226	22MF 50V ELECTRO	
	C019	QFN81HK-104	0.1MF 50V MYLAR	
	C020	QETB1VM-338	3300MF 35V ELECTRO	
	C021	QETB1VM-338	3300MF 35V ELECTRO	
	C022	EEW4205-688T	6800MF ELECTRO	
	C023	EEW4205-688T	6800MF ELECTRO	
	C024	QCVB1CM-103	0.01MF 16V CERAMIC	
	C028	QFN81HK-102	1000PF 50V MYLAR	D
	C028	QFN81HK-102	1000PF 50V MYLAR	BS
	C028	QFN81HK-102	1000PF 50V MYLAR	G
	C029	QFN81HK-102	1000PF 50V MYLAR	D
	C029	QFN81HK-102	1000PF 50V MYLAR	BS
	C029	QFN81HK-102	1000PF 50V MYLAR	G
	C030	QCVB1CM-103	0.01MF 16V CERAMIC	
	C032	QETB1HM-475	4.7MF 50V ELECTRO	
	C033	QETB1EM-476	47MF 25V ELECTRO	
	C036	QCHB1EZ-223	0.022MF 25V CERAMIC	D
	C036	QCHB1EZ-223	0.022MF 25V CERAMIC	BS
	C036	QCHB1EZ-223	0.022MF 25V CERAMIC	G
	C037	QFN81HK-102	1000PF 50V MYLAR	D
	C037	QFN81HK-102	1000PF 50V MYLAR	BS
	C037	QFN81HK-102	1000PF 50V MYLAR	G
	C038	QFN81HK-102	1000PF 50V MYLAR	D
	C038	QFN81HK-102	1000PF 50V MYLAR	BS
	C038	QFN81HK-102	1000PF 50V MYLAR	G
	C039	QCHB1EZ-223	0.022MF 25V CERAMIC	D
	C039	QCHB1EZ-223	0.022MF 25V CERAMIC	BS
	C039	QCHB1EZ-223	0.022MF 25V CERAMIC	G
	C040	QCHB1EZ-223	0.022MF 25V CERAMIC	D
	C040	QCHB1EZ-223	0.022MF 25V CERAMIC	BS
	C040	QCHB1EZ-223	0.022MF 25V CERAMIC	G
	C043	QFN81HK-102	1000PF 50V MYLAR	D
	C043	QFN81HK-102	1000PF 50V MYLAR	BS
	C043	QFN81HK-102	1000PF 50V MYLAR	G
	C044	QFN81HK-102	1000PF 50V MYLAR	D
	C044	QFN81HK-102	1000PF 50V MYLAR	BS
	C044	QFN81HK-102	1000PF 50V MYLAR	G
	C045	QETB1VM-228N	2200MF 35V ELECTRO	
	C047	QEK51HM-106	10MF 50V ELECTRO	
	C048	QEK51HM-106	10MF 50V ELECTRO	
	C500	QETB2AM-476	47MF 100V ELECTRO	
	C501	EEZ5009-106	10MF ELECTRO	
	C502	EEZ5009-106	10MF ELECTRO	
	C503	QCBB1HK-101	100PF 50V CERAMIC	
	C504	QCBB1HK-101	100PF 50V CERAMIC	

△ : SAFETY PARTS

Printed Circuit Board Ass'y and Parts List

■ENH-181☐ Front Amplifier & Power Primary PC Board Ass'y

Note : ENH-181 ☐ varies according to the areas employed. See note (1) when placing an order.


A
B
C
D
E
F
G
ENH-181
EMW10131-002
FLOW
ENH-181-2
2.5A-125V
2.5A-125V
F101
ENH-181-5
F001
4A-125V
F002 T1.25A
ENH-181-4
ENH-181-3

Resistors

△	ITEM	PART NUMBER	DESCRIPTION			AREA
△	R566	QRD14CJ-100S	10	1/4W	UNF.CARBON	
△	R567	QRD14CJ-560S	56	1/4W	UNF.CARBON	
	R568	QRD167J-152	1.5K	1/6W	CARBON	
	R569	QRD167J-152	1.5K	1/6W	CARBON	
	R570	QRD167J-223	22K	1/6W	CARBON	
	R573	QRD167J-104	100K	1/6W	CARBON	
	R574	QRD167J-104	100K	1/6W	CARBON	
	R575	ERD003J-681	680		R.NETWORK	
	R576	ERD003J-331	330		R.NETWORK	
	R577	QRD167J-821	820	1/6W	CARBON	
	R578	QRD167J-391	390	1/6W	CARBON	
	R579	QRD167J-104	100K	1/6W	CARBON	
	R580	QRD167J-104	100K	1/6W	CARBON	
△	R581	QRD14CJ-272S	2.7K	1/4W	UNF.CARBON	
△	R582	QRD14CJ-272S	2.7K	1/4W	UNF.CARBON	
△	R583	QRD14CJ-272S	2.7K	1/4W	UNF.CARBON	
△	R584	QRD14CJ-272S	2.7K	1/4W	UNF.CARBON	
△	R585	QRX012J-R22AM	0.22	1W	M.FILM	
△	R586	QRX012J-R22AM	0.22	1W	M.FILM	
△	R587	QRD14CJ-101S	100	1/4W	UNF.CARBON	A
△	R587	QRD14CJ-101S	100	1/4W	UNF.CARBON	B
△	R587	QRZ0077-101	100	1/4W	FUSIBLE	C
△	R587	QRZ0077-101	100	1/4W	FUSIBLE	D
△	R587	QRZ0077-101	100	1/4W	FUSIBLE	E
△	R587	QRZ0077-101	100	1/4W	FUSIBLE	FBS
△	R587	QRZ0077-101	100	1/4W	FUSIBLE	G
△	R588	QRZ0077-100	10	1/4W	FUSIBLE	
△	R589	QRD14CJ-100S	10	1/4W	UNF.CARBON	
△	R590	QRD14CJ-100S	10	1/4W	UNF.CARBON	
△	R591	QRD14CJ-100S	10	1/4W	UNF.CARBON	
△	R592	QRD14CJ-100S	10	1/4W	UNF.CARBON	
△	R593	QRZ0077-121	120	1/4W	FUSIBLE	
△	R594	QRD14CJ-4R7S	4.7	1/4W	UNF.CARBON	
	R595	QRD167J-474	470K	1/6W	CARBON	
	R596	QRD167J-103	10K	1/6W	CARBON	
	R597	QRD167J-104	100K	1/6W	CARBON	
	R598	QRD167J-104	100K	1/6W	CARBON	
	R599	QRD167J-103	10K	1/6W	CARBON	
	R649	QRD167J-104	100K	1/6W	CARBON	
	R737	QRD167J-392	3.9K	1/6W	CARBON	
	R738	QRD167J-392	3.9K	1/6W	CARBON	
	R739	QRD167J-471	470	1/6W	CARBON	
	R740	QRD167J-471	470	1/6W	CARBON	
	R741	QRD167J-153	15K	1/6W	CARBON	
	R742	QRD167J-272	2.7K	1/6W	CARBON	
	R746	QRD167J-333	33K	1/6W	CARBON	
	R748	QRD167J-223	22K	1/6W	CARBON	
	R749	QRD167J-392	3.9K	1/6W	CARBON	
	R750	QRD167J-104	100K	1/6W	CARBON	
	R751	QRD167J-104	100K	1/6W	CARBON	
	R764	QRD167J-472	4.7K	1/6W	CARBON	
	R765	QRD167J-472	4.7K	1/6W	CARBON	
	R766	QRD167J-472	4.7K	1/6W	CARBON	
	R767	QRD167J-472	4.7K	1/6W	CARBON	
	R768	QRD167J-103	10K	1/6W	CARBON	
	R769	QRD167J-103	10K	1/6W	CARBON	
	R770	QRD167J-103	10K	1/6W	CARBON	
	R771	QRD167J-103	10K	1/6W	CARBON	
	R772	QRD167J-103	10K	1/6W	CARBON	
	R773	QRD167J-223	22K	1/6W	CARBON	
	R774	QRD167J-133	13K	1/6W	CARBON	
	R775	QRD167J-133	13K	1/6W	CARBON	
	R777	QRD167J-242	2.4K	1/6W	CARBON	
	R778	QRD167J-242	2.4K	1/6W	CARBON	
	R779	QRD167J-822	8.2K	1/6W	CARBON	
	R780	QRD167J-822	8.2K	1/6W	CARBON	
	R781	QRD167J-222	2.2K	1/6W	CARBON	
	R782	QRD167J-222	2.2K	1/6W	CARBON	
	R783	QRD167J-562	5.6K	1/6W	CARBON	
	R784	QRD167J-562	5.6K	1/6W	CARBON	
	R785	QRD167J-152	1.5K	1/6W	CARBON	
	R786	QRD167J-152	1.5K	1/6W	CARBON	
	R787	QRD167J-103	10K	1/6W	CARBON	
	R788	QRD167J-103	10K	1/6W	CARBON	
	R789	QRD167J-392	3.9K	1/6W	CARBON	
	R791	QRD167J-102	1K	1/6W	CARBON	
	R792	QRD167J-102	1K	1/6W	CARBON	
	R793	QRD167J-102	1K	1/6W	CARBON	
	R794	QRD167J-102	1K	1/6W	CARBON	
	R795	QRD167J-222	2.2K	1/6W	CARBON	
	R797	QRD167J-102	1K	1/6W	CARBON	
	R801	QRD167J-102	1K	1/6W	CARBON	
	R802	QRD167J-102	1K	1/6W	CARBON	

△ : SAFETY PARTS

Others

△	ITEM	PART NUMBER	DESCRIPTION	AREA
		EMW10131-002	CIRCUIT BOARD	A
		EMW10131-002	CIRCUIT BOARD	B
		EMW10131-102	CIRCUIT BOARD	C
		E67132-T2RS	FUSE LABEL	C
		EMW10131-102	CIRCUIT BOARD	D

△ : SAFETY PARTS

Others

△	ITEM	PART NUMBER	DESCRIPTION	AREA
		EMW10131-102	CIRCUIT BOARD	E
		EMW10131-102BS	CIRCUIT BOARD	FBS
		EMW10131-102	CIRCUIT BOARD	G
	J001	QMS3L10-0A0	MINI JACK	
	J002	QMS3L10-0A0	MINI JACK	
	J003	VMC0107-003	CONNECT TERMINAL	C
	J003	VMC0107-003	CONNECT TERMINAL	D
	J003	VMC0107-003	CONNECT TERMINAL	E
	J003	VMC0107-003	CONNECT TERMINAL	FBS
	J003	VMC0107-003	CONNECT TERMINAL	G
	J004	VMC0107-003	CONNECT TERMINAL	C
	J004	VMC0107-003	CONNECT TERMINAL	D
	J004	VMC0107-003	CONNECT TERMINAL	E
	J004	VMC0107-003	CONNECT TERMINAL	FBS
	J004	VMC0107-003	CONNECT TERMINAL	G
	J500	EMV7122-103	CONNECTOR (3PIN)	
	J504	EMV7122-103	CONNECTOR (3PIN)	
	J520	EMB90TV-803A	SPEAKER TERMINAL	
	J521	EMN00TV-209A	2P PIN JACK	
	K503	ENZ8101-007	INDUCTOR	C
	K503	ENZ8101-007	INDUCTOR	D
	K503	ENZ8101-007	INDUCTOR	E
	K503	ENZ8101-007	INDUCTOR	FBS
	K503	ENZ8101-007	INDUCTOR	G
	K510	ENZ8101-007	INDUCTOR	C
	K510	ENZ8101-007	INDUCTOR	D
	K510	ENZ8101-007	INDUCTOR	E
	K510	ENZ8101-007	INDUCTOR	FBS
	K510	ENZ8101-007	INDUCTOR	G
	K511	ENZ8101-007	INDUCTOR	C
	K511	ENZ8101-007	INDUCTOR	D
	K511	ENZ8101-007	INDUCTOR	E
	K511	ENZ8101-007	INDUCTOR	FBS
	K511	ENZ8101-007	INDUCTOR	G
	K512	ENZ8101-007	INDUCTOR	C
	K512	ENZ8101-007	INDUCTOR	D
	K512	ENZ8101-007	INDUCTOR	E
	K512	ENZ8101-007	INDUCTOR	FBS
	K512	ENZ8101-007	INDUCTOR	G
	K513	ENZ8101-007	INDUCTOR	C
	K513	ENZ8101-007	INDUCTOR	D
	K513	ENZ8101-007	INDUCTOR	E
	K513	ENZ8101-007	INDUCTOR	FBS
	K513	ENZ8101-007	INDUCTOR	G
	L501	EQL0001-R45	INDUCTOR	
	L502	EQL0001-R45	INDUCTOR	
	L571	EQL0001-R45	INDUCTOR	
	L572	EQL0001-R45	INDUCTOR	
	EP002	E70859-001	EARTH PLATE	A
	EP002	E70859-001	EARTH PLATE	B
	FT001	EMG7331-002	FUSE CLIP	
	FT002	EMG7331-002	FUSE CLIP	C
	FT011	EMG7331-002U	FUSE CLIP	
	FT022	EMG7331-002U	FUSE CLIP	C
	FT101	EMG7331-002	FUSE CLIP	
	FT102	EMG7331-002U	FUSE CLIP	
	FT103	EMG7331-002	FUSE CLIP	
	FT104	EMG7331-002U	FUSE CLIP	
	FW002	EWR33E-16SST	FLAT WIRE (3PIN)	
	FW004	EWR34E-20SST	FLAT WIRE (4PIN)	
	FW501	EWR39E-30SST	FLAT WIRE (9PIN)	
	FW502	EWR38E-20LST	FLAT WIRE (8PIN)	
	JA001	EMV7127-015	CONNECTOR (15PIN)	
	JA002	EMV7127-013	CONNECTOR (13PIN)	
	JA003	EMV7127-011	CONNECTOR (11PIN)	
	JA501	EMV7125-009R	CONNECTOR (9PIN)	
	JA502	EMV7125-009R	CONNECTOR (9PIN)	
	JB501	EMV5125-009	PLUG ASSY (9PIN)	
	JB502	EMV5125-009	PLUG ASSY (9PIN)	
	JB503	EMV5125-015	PLUG ASSY (15PIN)	
	JB504	EMV5125-008	PLUG ASSY (8PIN)	
	JB505	EMV5125-012	PLUG ASSY (12PIN)	
	JB506	EMV5125-012	PLUG ASSY (12PIN)	
	JB507	EMV5125-014	PLUG ASSY (14PIN)	
	JB508	EMV5125-010	PLUG ASSY (10PIN)	
	JB509	EMV5125-009	PLUG ASSY (9PIN)	
	JB901	EMV7123-037	CONNECTOR (37PIN)	
	JT011	EMV7122-005	CONNECTOR (5PIN) A part of J511	
	JT012	EMV7122-005	CONNECTOR (5PIN) A part of J502	
	JT111	EMV7122-005	CONNECTOR (5PIN) A part of J511	
	JT112	EMV7122-103	CONNECTOR (3PIN) A part of J502	
	RY001	ESK1D12-211M	RELAY	
	RY500	ESK8D12-211M	RELAY	
	RY501	ESK8D12-211M	RELAY	
	RY502	ESK8D24-212	RELAY	
	SR500	ERT-D2WHK202S	NEGATIVE THERMISTOR	
	TB001	E65508-002	TAB	
	TB002	E65508-002	TAB	

△ : SAFETY PARTS

Capacitors

Δ	ITEM	PART NUMBER	DESCRIPTION			AREA
	C505	QCBB1HK-221	220PF	50V	CERAMIC	
	C506	QCBB1HK-820	82PF	50V	CERAMIC	
	C507	EEZ5009-105	1MF		ELECTRO	
	C508	EEZ2505-107	100MF		ELECTRO	
	C509	QCS21HJ-5R0	5PF	50V	CERAMIC	
	C510	QCS21HJ-5R0	5PF	50V	CERAMIC	
	C511	QETB1EM-226	22MF	25V	ELECTRO	
	C512	QETB1EM-226	22MF	25V	ELECTRO	
	C514	QFN81HK-104	0.1MF	50V	MYLAR	
	C515	QFV81HJ-104	0.1MF	50V	T.FILM	
	C516	QFV81HJ-104	0.1MF	50V	T.FILM	
	C517	QEK51CM-226	22MF	16V	ELECTRO	
	C518	QER51CM-476	47MF	16V	ELECTRO	
	C519	QEK51EM-106	10MF	25V	ELECTRO	
	C520	QETB1EM-106	10MF	25V	ELECTRO	
	C521	QER51CM-476	47MF	16V	ELECTRO	
	C531	QEK51CM-226	22MF	16V	ELECTRO	
	C532	QEK51CM-226	22MF	16V	ELECTRO	
	C552	QETB1HM-105	1MF	50V	ELECTRO	
	C554	QCSB1HJ-100	10PF	50V	CERAMIC	
	C555	QER51HM-105G	1MF	50V	ELECTRO	
	C557	QCSB1HJ-100	10PF	50V	CERAMIC	
	C558	QER51CM-226	22MF	16V	ELECTRO	
	C567	QFV81HJ-104	0.1MF	50V	T.FILM	
	C568	QFV81HJ-104	0.1MF	50V	T.FILM	
	C570	QETB2AM-476	47MF	100V	ELECTRO	
	C571	EEZ5009-106	10MF		ELECTRO	
	C572	EEZ5009-106	10MF		ELECTRO	
	C573	QCBB1HK-101	100PF	50V	CERAMIC	
	C574	QCBB1HK-101	100PF	50V	CERAMIC	
	C575	QCBB1HK-221	220PF	50V	CERAMIC	
	C576	QCBB1HK-820	82PF	50V	CERAMIC	
	C577	EEZ5009-105	1MF		ELECTRO	
	C578	EEZ2505-107	100MF		ELECTRO	
	C579	QCS21HJ-5R0	5PF	50V	CERAMIC	
	C580	QCS21HJ-5R0	5PF	50V	CERAMIC	
	C581	QETB1EM-226	22MF	25V	ELECTRO	
	C582	QETB1EM-226	22MF	25V	ELECTRO	
	C585	QFV81HJ-104	0.1MF	50V	T.FILM	
	C586	QFV81HJ-104	0.1MF	50V	T.FILM	
	C587	QFV81HJ-104	0.1MF	50V	T.FILM	
	C588	QFV81HJ-104	0.1MF	50V	T.FILM	
	C591	QFN32AK-104	0.1MF	100V	MYLAR	
	C592	QFN82AK-103	0.01MF	100V	MYLAR	
	C593	QFN82AK-103	0.01MF	100V	MYLAR	
	C594	QFN81HK-104	0.1MF	50V	MYLAR	
	C595	QFN81HK-104	0.1MF	50V	MYLAR	
	C597	QFN81HK-104	0.1MF	50V	MYLAR	
	C599	QCV81CM-103	0.01MF	16V	CERAMIC	
	C701	QFV81HJ-104	0.1MF	50V	T.FILM	
	C702	QFV81HJ-104	0.1MF	50V	T.FILM	
	C703	QFV81HJ-104	0.1MF	50V	T.FILM	
	C704	QFV81HJ-104	0.1MF	50V	T.FILM	
	C705	QETB1HM-105	1MF	50V	ELECTRO	
	C706	QETB1HM-105	1MF	50V	ELECTRO	
	C707	QETB1HM-105	1MF	50V	ELECTRO	
	C708	QETB1HM-105	1MF	50V	ELECTRO	

Δ : SAFETY PARTS

Resistors

Δ	ITEM	PART NUMBER	DESCRIPTION			AREA
Δ	R001	QRG022J-221A	220	2W	O.M.FILM	
	R002	QRD167J-223	22K	1/6W	CARBON	
	R003	QRD167J-222	2.2K	1/6W	CARBON	
Δ	R005	QRC128K-275EM	2.7M	1/2W	COMPOSI	A
Δ	R005	QRC128K-275EM	2.7M	1/2W	COMPOSI	B
Δ	R007	PTH61G30BD2R2N			FUSIBLE	
	R008	QRD167J-332	3.3K	1/6W	CARBON	
Δ	R010	QRD14CJ-471S	470	1/4W	UNF.CARBON	
	R015	QRD167J-271	270	1/6W	CARBON	
	R016	QRD167J-562	5.6K	1/6W	CARBON	
	R021	QRD167J-562	5.6K	1/6W	CARBON	
	R022	QRD167J-562	5.6K	1/6W	CARBON	
Δ	R024	QRG022J-271A	270	2W	O.M.FILM	
Δ	R025	QRG022J-271A	270	2W	O.M.FILM	
Δ	R027	QRD14CJ-100S	10	1/4W	UNF.CARBON	A
Δ	R027	QRZ0077-100	10	1/4W	FUSIBLE	B
Δ	R027	QRZ0077-100	10	1/4W	FUSIBLE	C
Δ	R027	QRZ0077-100	10	1/4W	FUSIBLE	D
Δ	R027	QRZ0077-100	10	1/4W	FUSIBLE	E
Δ	R027	QRZ0077-100	10	1/4W	FUSIBLE	FBS
Δ	R027	QRZ0077-100	10	1/4W	FUSIBLE	G
Δ	R028	QRD14CJ-100S	10	1/4W	UNF.CARBON	A
Δ	R028	QRZ0077-100	10	1/4W	FUSIBLE	B
Δ	R028	QRZ0077-100	10	1/4W	FUSIBLE	C
Δ	R028	QRZ0077-100	10	1/4W	FUSIBLE	D

Δ : SAFETY PARTS

Resistors

Δ	ITEM	PART NUMBER	DESCRIPTION			AREA
Δ	R028	QRZ0077-100	10	1/4W	FUSIBLE	E
Δ	R028	QRZ0077-100	10	1/4W	FUSIBLE	FBS
Δ	R028	QRZ0077-100	10	1/4W	FUSIBLE	G
Δ	R029	QRD14CJ-100S	10	1/4W	UNF.CARBON	A
Δ	R029	QRZ0077-100	10	1/4W	FUSIBLE	B
Δ	R029	QRZ0077-100	10	1/4W	FUSIBLE	C
Δ	R029	QRZ0077-100	10	1/4W	FUSIBLE	D
Δ	R029	QRZ0077-100	10	1/4W	FUSIBLE	E
Δ	R029	QRZ0077-100	10	1/4W	FUSIBLE	FBS
Δ	R029	QRZ0077-100	10	1/4W	FUSIBLE	G
Δ	R030	QRD14CJ-3R9S	3.9	1/4W	UNF.CARBON	A
Δ	R030	QRD14CJ-3R9S	3.9	1/4W	UNF.CARBON	B
Δ	R031	QRD14CJ-3R9S	3.9	1/4W	UNF.CARBON	A
Δ	R031	QRD14CJ-3R9S	3.9	1/4W	UNF.CARBON	B
Δ	R032	QRD14CJ-3R9S	3.9	1/4W	UNF.CARBON	A
Δ	R032	QRD14CJ-3R9S	3.9	1/4W	UNF.CARBON	B
Δ	R033	QRD14CJ-3R9S	3.9	1/4W	UNF.CARBON	A
Δ	R033	QRD14CJ-3R9S	3.9	1/4W	UNF.CARBON	B
Δ	R034	QRD14CJ-3R9S	3.9	1/4W	UNF.CARBON	A
Δ	R034	QRD14CJ-3R9S	3.9	1/4W	UNF.CARBON	B
Δ	R036	QRD14CJ-3R9S	3.9	1/4W	UNF.CARBON	A
Δ	R036	QRD14CJ-3R9S	3.9	1/4W	UNF.CARBON	B
Δ	R037	QRD14CJ-3R9S	3.9	1/4W	UNF.CARBON	A
Δ	R037	QRD14CJ-3R9S	3.9	1/4W	UNF.CARBON	B
Δ	R039	QRD14CJ-3R9S	3.9	1/4W	UNF.CARBON	A
Δ	R039	QRD14CJ-3R9S	3.9	1/4W	UNF.CARBON	B
Δ	R041	QRD14CJ-220S	22	1/4W	UNF.CARBON	A
Δ	R041	QRD14CJ-220S	22	1/4W	UNF.CARBON	B
Δ	R042	QRD14CJ-3R9S	3.9	1/4W	UNF.CARBON	A
Δ	R044	QRD14CJ-5R6S	5.6	1/4W	UNF.CARBON	A
Δ	R044	QRD14CJ-5R6S	5.6	1/4W	UNF.CARBON	B
Δ	R044	QRZ0077-6R8	6.8	1/4W	FUSIBLE	C
Δ	R044	QRZ0077-5R6	5.6	1/4W	FUSIBLE	D
Δ	R044	QRZ0077-5R6	5.6	1/4W	FUSIBLE	E
Δ	R044	QRZ0077-5R6	5.6	1/4W	FUSIBLE	FBS
Δ	R044	QRZ0077-5R6	5.6	1/4W	FUSIBLE	G
Δ	R500	QRG022J-820A	82	2W	O.M.FILM	
	R503	QRD167J-104	100K	1/6W	CARBON	
	R504	QRD167J-104	100K	1/6W	CARBON	
	R505	ERD003J-681	680		R.NETWORK	
	R506	ERD003J-331	330		R.NETWORK	
	R507	QRD167J-821	820	1/6W	CARBON	
	R508	QRD167J-391	390	1/6W	CARBON	
	R509	QRD167J-104	100K	1/6W	CARBON	
	R510	QRD167J-104	100K	1/6W	CARBON	
Δ	R511	QRD14CJ-272S	2.7K	1/4W	UNF.CARBON	
Δ	R512	QRD14CJ-272S	2.7K	1/4W	UNF.CARBON	
Δ	R513	QRD14CJ-272S	2.7K	1/4W	UNF.CARBON	
Δ	R514	QRD14CJ-272S	2.7K	1/4W	UNF.CARBON	
Δ	R515	QRX012J-R22AM	0.22	1W	M.FILM	
Δ	R516	QRX012J-R22AM	0.22	1W	M.FILM	
Δ	R517	QRD14CJ-101S	100	1/4W	UNF.CARBON	A
Δ	R517	QRD14CJ-101S	100	1/4W	UNF.CARBON	B
Δ	R517	QRZ0077-101	100	1/4W	FUSIBLE	C
Δ	R517	QRZ0077-101	100	1/4W	FUSIBLE	D
Δ	R517	QRZ0077-101	100	1/4W	FUSIBLE	E
Δ	R517	QRZ0077-101	100	1/4W	FUSIBLE	FBS
Δ	R517	QRZ0077-101	100	1/4W	FUSIBLE	G
Δ	R518	QRZ0077-100	10	1/4W	FUSIBLE	
Δ	R519	QRD14CJ-100S	10	1/4W	UNF.CARBON	
Δ	R520	QRD14CJ-100S	10	1/4W	UNF.CARBON	
Δ	R521	QRD14CJ-100S	10	1/4W	UNF.CARBON	
Δ	R522	QRD14CJ-100S	10	1/4W	UNF.CARBON	
	R523	QRD167J-104	100K	1/6W	CARBON	
	R524	QRD167J-823	82K	1/6W	CARBON	
	R525	QRD167J-474	470K	1/6W	CARBON	
	R527	QRD167J-303	30K	1/6W	CARBON	
	R528	QRD167J-562	5.6K	1/6W	CARBON	
	R529	QRD167J-103	10K	1/6W	CARBON	
Δ	R530	QRD14CJ-100S	10	1/4W	UNF.CARBON	
	R531	QRD167J-103	10K	1/6W	CARBON	
	R532	QRD167J-104	100K	1/6W	CARBON	
	R533	QRD167J-103	10K	1/6W	CARBON	
Δ	R534	QRD14CJ-100S	10	1/4W	UNF.CARBON	
	R535	QRD167J-222	2.2K	1/6W	CARBON	
	R536	QRD167J-222	2.2K	1/6W	CARBON	
	R537	QRD167J-104	100K	1/6W	CARBON	
	R538	QRD167J-751	750	1/6W	CARBON	
	R539	QRD167J-362	3.6K	1/6W	CARBON	
	R540	QRD167J-181	180	1/6W	CARBON	
	R541	QRD167J-820	82	1/6W	CARBON	
	R543	QRD167J-104	100K	1/6W	CARBON	
	R544	QRD167J-823	82K	1/6W	CARBON	
	R545	QRD167J-153	15K	1/6W	CARBON	
	R546	QRD167J-153	15K	1/6W	CARBON	
	R548	QRD167J-103	10K	1/6W	CARBON	
Δ	R549	QRG022J-122A	1.2K	2W	O.M.FILM	
Δ	R550	QRZ0077-100	10	1/4W	FUSIBLE	
	R557	QRD167J-104	100K	1/6W	CARBON	
	R558	QRD167J-823	82K	1/6W	CARBON	

Δ : SAFETY PARTS

Transistors

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	Q542	2SD2061(E,F)	SILICON ROHM	
	Q543	2SD2061(E,F)	SILICON ROHM	
	Q544	2SK246(GR,BL)	F.E.T TOSHIBA	
	Q545	DTC144ES	SILICON ROHM	
	Q546	DTC144ES	SILICON ROHM	
	Q547	DTC114YS	SILICON ROHM	
	Q548	DTA144ES	SILICON ROHM	
	Q549	DTA114YS	SILICON ROHM	
	Q550	DTC144ES	SILICON ROHM	
	Q551	DTC114YS	SILICON ROHM	
	Q552	DTA144ES	SILICON ROHM	
	Q600	2SC458(C)	SILICON HITACHI	
	Q601	2SA933S(S)	SILICON ROHM	
	Q604	DTC114YS	SILICON ROHM	
	Q895	2SD2144S(VW)	SILICON ROHM	
	Q896	2SD2144S(VW)	SILICON ROHM	

△ : SAFETY PARTS

I.C.s.

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	IC501	SI-18751	I.C. SANKEN	
	IC502	SI-18751	I.C. SANKEN	
	IC505	LA2730	I.C. SANYO	
	IC510	TC9164N	I.C. TOSHIBA	
	IC511	BA15218N	I.C. ROHM	
	IC512	BA15218N	I.C. ROHM	
	IC513	LC4966	I.C. SANYO	
	IC514	LB1639-CV	I.C. SANYO	
	IC515	VC4580LD	I.C. DAINICHI	
	IC600	LA7952	I.C. SANYO	
	IC808	VC4580L	I.C. DAINICHI	
	IC809	BA15218N	I.C. ROHM	
	IC810	BA15218N	I.C. ROHM	

△ : SAFETY PARTS

Diodes

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	D029	1SR139-200	SILICON ROHM	
	D513	1SS133	SILICON ROHM	
	D514	MTZ13JC	ZENER ROHM	
	D515	RD13JSB3	ZENER NEC	
	D516	MTZ11JC	ZENER ROHM	
	D517	MTZ6.2JC	ZENER ROHM	
	D518	1SS133	SILICON ROHM	
	D519	RD12JSB3	ZENER NEC	
	D532	MTZ13JC	ZENER ROHM	
	D533	MTZ12JC	ZENER ROHM	
	D534	MTZ12JC	ZENER ROHM	
	D535	MTZ15JC	ZENER ROHM	
	D536	MTZ12JC	ZENER ROHM	
	D537	MTZ15JC	ZENER ROHM	
	D538	MTZ6.8JC	ZENER ROHM	
	D875	MTZ10JC	ZENER ROHM	
	D876	MTZ10JC	ZENER ROHM	

△ : SAFETY PARTS

Capacitors

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	C520	QCVB1CM-103	0.01MF 16V CERAMIC	
	C521	QETB1CM-226	22MF 16V ELECTRO	
	C522	QETB1CM-226	22MF 16V ELECTRO	
	C523	QERS1EM-106	10MF 25V ELECTRO	
	C524	QERS1EM-106	10MF 25V ELECTRO	
	C525	QFV81HJ-104	0.1MF 50V T.FILM	
	C526	QFV81HJ-104	0.1MF 50V T.FILM	
	C527	QCBB1HK-101	100PF 50V CERAMIC	
	C528	QCBB1HK-101	100PF 50V CERAMIC	
	C531	QCVB1CM-103	0.01MF 16V CERAMIC	
	C532	QCVB1CM-103	0.01MF 16V CERAMIC	
	C533	QERS1EM-106	10MF 25V ELECTRO	
	C534	QEKS1HM-105G	1MF 50V ELECTRO	
	C535	QEKS1HM-105G	1MF 50V ELECTRO	
	C536	QETB1CM-226	22MF 16V ELECTRO	
	C537	QCVB1CM-103	0.01MF 16V CERAMIC	
	C539	QERS1CM-226	22MF 16V ELECTRO	
	C540	QCVB1CM-103	0.01MF 16V CERAMIC	
	C541	QETB1CM-476	47MF 16V ELECTRO	
	C542	QETB1CM-226	22MF 16V ELECTRO	
	C543	QETB1HM-475	4.7MF 50V ELECTRO	
	C544	QETB1HM-475	4.7MF 50V ELECTRO	
	C545	QETB1EM-106	10MF 25V ELECTRO	
	C546	QETB1EM-106	10MF 25V ELECTRO	
	C547	QETB1EM-106	10MF 25V ELECTRO	

△ : SAFETY PARTS

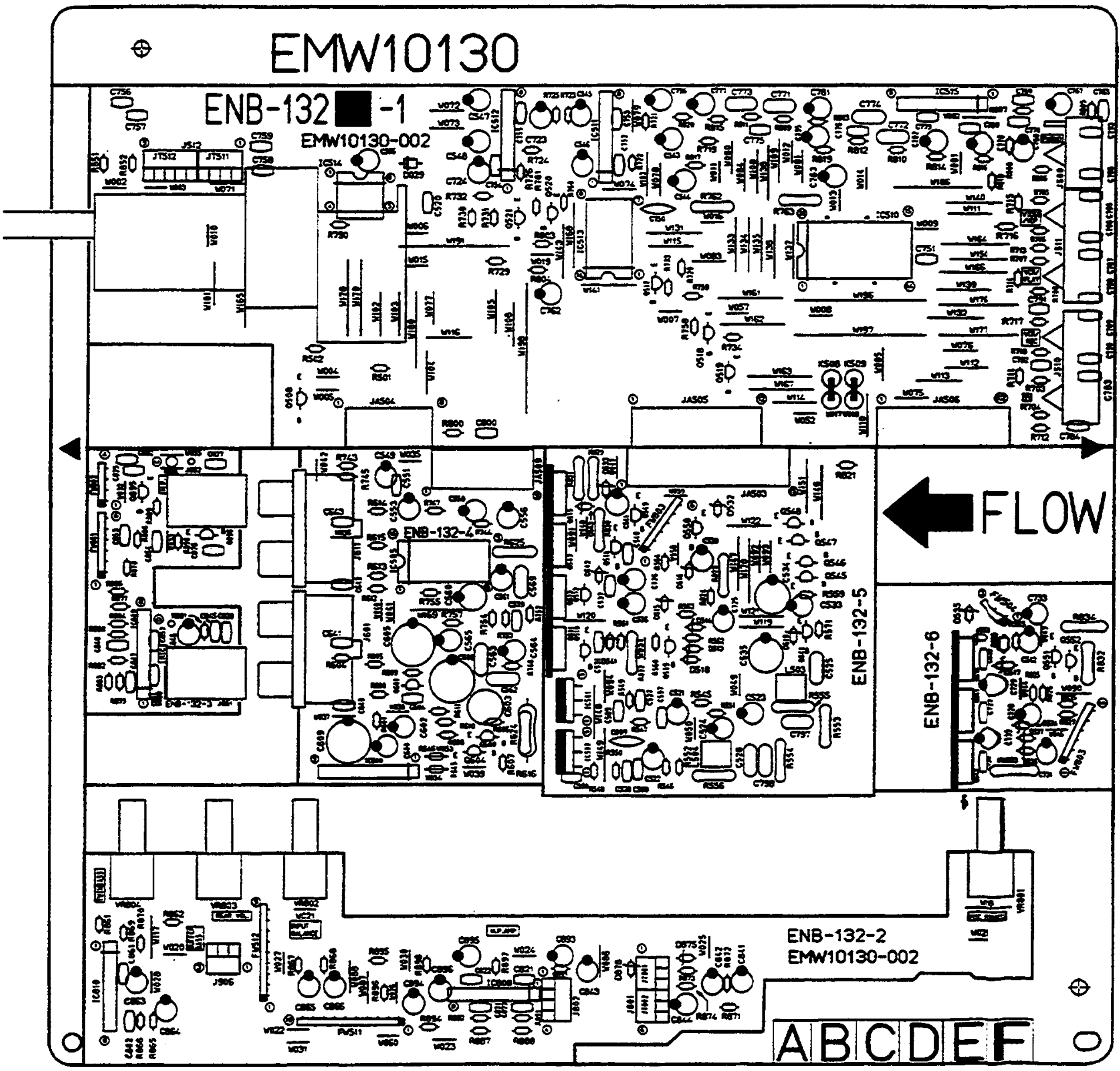
Capacitors

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	C548	QETB1EM-106	10MF 25V ELECTRO	
	C549	QETB1HM-105	1MF 50V ELECTRO	
	C550	QETB1EM-106	10MF 25V ELECTRO	
	C551	QCBB1HK-471	470PF 50V CERAMIC	
	C553	QETB1HM-105	1MF 50V ELECTRO	
	C556	QETB1HM-105	1MF 50V ELECTRO	
	C559	QCXB1CM-472	4700PF 16V CERAMIC	
	C560	QETB1CM-107	100MF 16V ELECTRO	
	C561	QETB1CM-226	22MF 16V ELECTRO	
	C562	QFV81HJ-333	0.033MF 50V T.FILM	
	C563	QFV81HJ-104	0.1MF 50V T.FILM	
	C564	QETB1HM-105	1MF 50V ELECTRO	
	C565	QEB51HM-334	0.33MF 50V LLC ELECTR	
	C566	QETB1AM-476	47MF 10V ELECTRO	
	C569	QFV81HJ-333	0.033MF 50V T.FILM	
	C597	QCBB1HK-331	330PF 50V CERAMIC	
	C598	QCBB1HK-331	330PF 50V CERAMIC	
	C600	QETB1AM-476	47MF 10V ELECTRO	
	C602	QETB1AM-476	47MF 10V ELECTRO	
	C603	QENS1CM-476	47MF 16V NON POLE	
	C604	QCSB1HJ-680	68PF 50V CERAMIC	
	C605	QETB0JM-108	1000MF 6.3V ELECTRO	
	C608	QETB0JM-108	1000MF 6.3V ELECTRO	
	C609	EET1604-108M	1000MF ELECTRO	
	C723	EEZ5009-106	10MF ELECTRO	
	C724	EEZ5009-106	10MF ELECTRO	
	C725	QERS1CM-476	47MF 16V ELECTRO	
	C726	QETB1CM-476	47MF 16V ELECTRO	
	C727	QCVB1CM-103	0.01MF 16V CERAMIC	
	C728	QETB1CM-226	22MF 16V ELECTRO	
	C729	QEHC1EM-476	47MF 25V ELECTRO	
	C730	QCVB1CM-103	0.01MF 16V CERAMIC	
	C731	QETB1CM-226	22MF 16V ELECTRO	
	C732	QEHC1EM-476	47MF 25V ELECTRO	
	C733	QETB1AM-476	47MF 10V ELECTRO	
	C762	EEZ2505-107	100MF ELECTRO	
	C763	EEZ2505-107	100MF ELECTRO	
	C765	QCBB1HK-101	100PF 50V CERAMIC	A
	C765	QCBB1HK-221	220PF 50V CERAMIC	B
	C765	QCBB1HK-221	220PF 50V CERAMIC	C
	C766	QCBB1HK-101	100PF 50V CERAMIC	A
	C766	QCBB1HK-221	220PF 50V CERAMIC	B
	C766	QCBB1HK-221	220PF 50V CERAMIC	C
	C767	QETB1HM-475	4.7MF 50V ELECTRO	
	C768	QETB1HM-475	4.7MF 50V ELECTRO	
	C769	QCBB1HK-101	100PF 50V CERAMIC	
	C770	QCBB1HK-101	100PF 50V CERAMIC	
	C771	QFN81HJ-682	6800PF 50V MYLAR	
	C772	QFN81HJ-682	6800PF 50V MYLAR	
	C773	QFN81HJ-182	1800PF 50V MYLAR	
	C774	QFN81HJ-182	1800PF 50V MYLAR	
	C775	QCBB1HK-101	100PF 50V CERAMIC	
	C776	QCBB1HK-101	100PF 50V CERAMIC	
	C777	QETB1HM-475	4.7MF 50V ELECTRO	
	C778	QETB1HM-475	4.7MF 50V ELECTRO	
	C779	QCBB1HK-101	100PF 50V CERAMIC	
	C780	QCBB1HK-101	100PF 50V CERAMIC	
	C781	QETB1EM-476	47MF 25V ELECTRO	
	C782	QETB1EM-476	47MF 25V ELECTRO	
	C783	QCBB1HK-331	330PF 50V CERAMIC	
	C784	QCBB1HK-331	330PF 50V CERAMIC	
	C785	QCBB1HK-331	330PF 50V CERAMIC	
	C786	QCBB1HK-331	330PF 50V CERAMIC	
	C787	QCBB1HK-331	330PF 50V CERAMIC	
	C788	QCBB1HK-331	330PF 50V CERAMIC	
	C789	QCBB1HK-221	220PF 50V CERAMIC	
	C790	QCBB1HK-221	220PF 50V CERAMIC	
	C791	QCBB1HK-221	220PF 50V CERAMIC	
	C792	QCBB1HK-221	220PF 50V CERAMIC	
	C793	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C795	QETB1EM-476	47MF 25V ELECTRO	
	C796	QETB1EM-476	47MF 25V ELECTRO	
	C797	QFV81HJ-104	0.1MF 50V T.FILM	
	C798	QFV81HJ-104	0.1MF 50V T.FILM	
	C800	QCGB1HK-102	1000PF 50V CERAMIC	
	C821	QCBB1HK-101	100PF 50V CERAMIC	
	C822	QCBB1HK-101	100PF 50V CERAMIC	
	C823	QCSB1HJ-470	47PF 50V CERAMIC	
	C824	QCSB1HJ-470	47PF 50V CERAMIC	
	C825	QCBB1HK-331	330PF 50V CERAMIC	B
	C825	QCBB1HK-331	330PF 50V CERAMIC	C
	C826	QCBB1HK-331	330PF 50V CERAMIC	B
	C826	QCBB1HK-331	330PF 50V CERAMIC	C
	C827	QCBB1HK-331	330PF 50V CERAMIC	B
	C827	QCBB1HK-331	330PF 50V CERAMIC	C
	C828	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C841	QETB1HM-106	10MF 50V ELECTRO	
	C842	QETB1HM-106	10MF 50V ELECTRO	
	C843	QETB1EM-106	10MF 25V ELECTRO	
	C844	QETB1EM-106	10MF 25V ELECTRO	
	C845	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C846	QERS1CM-106G	10MF 16V ELECTRO	
	C847	QCBB1HK-221	220PF 50V CERAMIC	
	C848	QCBB1HK-221	220PF 50V CERAMIC	
	C851	QCBB1HK-101	100PF 50V CERAMIC	

△ : SAFETY PARTS

■ENB-132☐ Rear Amplifier & Source Select PC Board Ass'y

Note : ENB-132 ☐ varies according to the areas employed. See note (1) when placing an order.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ENB-132-4
ENB-132-5
ENB-132-6
FLOW
ENB-132-3
ENB-132-2
EMW10130-002
A B C D E F

Note (1)

PC Board Ass'y	Designated Areas
ENB-132 A	the U.S.A., Canada
ENB-132 B	Australia, the U.K. Continental Europe Universal Type
ENB-132 C	Germany, Italy

Transistors

△	ITEM	PART NUMBER	DESCRIPTION		AREA
	Q508	DTC144ES	SILICON	ROHM	
	Q509	2SC1685(Q,R)	SILICON	MATSUSHITA	
	Q510	2SA564A(Q,R)	SILICON	MATSUSHITA	
	Q511	2SB1187(E,F)	SILICON	ROHM	
	Q512	2SA564A(Q,R)	SILICON	MATSUSHITA	
	Q513	2SB1187(E,F)	SILICON	ROHM	
	Q514	2SC1685(Q,R)	SILICON	MATSUSHITA	
	Q515	2SD2061(E,F)	SILICON	ROHM	
	Q516	2SD2061(E,F)	SILICON	ROHM	
	Q517	2SD2144S(VW)	SILICON	ROHM	
	Q518	2SD2144S(VW)	SILICON	ROHM	
	Q519	DTA144ES	SILICON	ROHM	
	Q520	DTA144ES	SILICON	ROHM	
	Q521	DTA144ES	SILICON	ROHM	
	Q541	2SB1187(F,G)	SILICON	ROHM	

△ : SAFETY PARTS

Capacitors

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	C852	QCBB1HK-101	100PF 50V CERAMIC	
	C853	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C854	QCVB1CM-103	0.01MF 16V CERAMIC	
	C861	QCBB1HK-101	100PF 50V CERAMIC	
	C862	QCBB1HK-101	100PF 50V CERAMIC	
	C863	QETB1HM-475	4.7MF 50V ELECTRO	
	C864	QETB1HM-475	4.7MF 50V ELECTRO	
	C865	QETB1HM-475	4.7MF 50V ELECTRO	
	C866	QETB1HM-475	4.7MF 50V ELECTRO	
	C892	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C893	QER61EM-475G	4.7MF 25V ELECTRO	
	C894	QER61EM-475G	4.7MF 25V ELECTRO	
	C895	QER61EM-475G	4.7MF 25V ELECTRO	
	C896	QER61EM-475G	4.7MF 25V ELECTRO	
	C899	QCF21HP-103	0.01MF 50V CERAMIC	

△ : SAFETY PARTS

Resistors

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	R501	QRD167J-331	330 1/6W CARBON	
	R502	QRD167J-331	330 1/6W CARBON	
	R545	QRD167J-103	10K 1/6W CARBON	
	R546	QRD167J-103	10K 1/6W CARBON	
	R547	QRD167J-103	10K 1/6W CARBON	
	R548	QRD167J-103	10K 1/6W CARBON	
	R549	QRD167J-103	10K 1/6W CARBON	
	R550	QRD167J-103	10K 1/6W CARBON	
	R551	QRD167J-391	390 1/6W CARBON	
	R552	QRD167J-391	390 1/6W CARBON	
△	R553	QRD14CJ-1R0S	1 1/4W UNF.CARBON	
△	R554	QRD14CJ-1R0S	1 1/4W UNF.CARBON	
△	R555	QRD14CJ-100S	10 1/4W UNF.CARBON	
△	R556	QRD14CJ-100S	10 1/4W UNF.CARBON	
	R559	QRD167J-103	10K 1/6W CARBON	
	R560	QRD167J-332	3.3K 1/6W CARBON	
	R561	QRD167J-332	3.3K 1/6W CARBON	
	R562	QRD167J-472	4.7K 1/6W CARBON	
	R563	QRD167J-222	2.2K 1/6W CARBON	
	R564	QRD167J-332	3.3K 1/6W CARBON	
	R565	QRD167J-103	10K 1/6W CARBON	A
	R565	QRD167J-512	5.1K 1/6W CARBON	B
	R565	QRD167J-512	5.1K 1/6W CARBON	C
	R571	QRD167J-271	270 1/6W CARBON	
	R600	QRD167J-750	75 1/6W CARBON	
	R601	QRD167J-100	10 1/6W CARBON	
	R604	QRD167J-750	75 1/6W CARBON	
	R605	QRD167J-100	10 1/6W CARBON	
	R606	QRD167J-222	2.2K 1/6W CARBON	
	R607	QRD167J-682	6.8K 1/6W CARBON	
	R608	QRD167J-123	12K 1/6W CARBON	
	R609	QRD167J-121	120 1/6W CARBON	
	R610	QRD167J-221	220 1/6W CARBON	
	R611	QRD167J-121	120 1/6W CARBON	
	R612	QRD167J-750	75 1/6W CARBON	
	R613	QRD167J-473	47K 1/6W CARBON	
	R614	QRD167J-750	75 1/6W CARBON	
	R615	QRD167J-473	47K 1/6W CARBON	
△	R616	QRG022J-221A	220 2W O.M.FILM	
△	R624	QRD14CJ-100S	10 1/4W UNF.CARBON	A
△	R624	QRZ0077-100	10 1/4W FUSIBLE	B
△	R624	QRZ0077-100	10 1/4W FUSIBLE	C
△	R625	QRD14CJ-100S	10 1/4W UNF.CARBON	A
△	R625	QRZ0077-100	10 1/4W FUSIBLE	B
△	R625	QRZ0077-100	10 1/4W FUSIBLE	C
	R701	QRD167J-153	15K 1/6W CARBON	
	R704	QRD167J-153	15K 1/6W CARBON	
	R705	QRD167J-153	15K 1/6W CARBON	
	R706	QRD167J-153	15K 1/6W CARBON	
	R707	QRD167J-153	15K 1/6W CARBON	
	R708	QRD167J-153	15K 1/6W CARBON	
	R711	QRD167J-104	100K 1/6W CARBON	
	R712	QRD167J-104	100K 1/6W CARBON	
	R713	QRD167J-104	100K 1/6W CARBON	
	R714	QRD167J-104	100K 1/6W CARBON	
	R715	QRD167J-104	100K 1/6W CARBON	
	R716	QRD167J-104	100K 1/6W CARBON	
	R717	QRD167J-471	470 1/6W CARBON	
	R718	QRD167J-471	470 1/6W CARBON	
	R719	QRD167J-104	100K 1/6W CARBON	
	R720	QRD167J-104	100K 1/6W CARBON	
	R721	QRD167J-104	100K 1/6W CARBON	
	R722	QRD167J-104	100K 1/6W CARBON	
	R723	QRD167J-332	3.3K 1/6W CARBON	
	R724	QRD167J-332	3.3K 1/6W CARBON	
	R725	QRD167J-104	100K 1/6W CARBON	
	R726	QRD167J-104	100K 1/6W CARBON	
	R729	QRD167J-471	470 1/6W CARBON	
	R730	QRD167J-471	470 1/6W CARBON	
	R731	QRD167J-104	100K 1/6W CARBON	

△ : SAFETY PARTS

Resistors

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	R732	QRD167J-104	100K 1/6W CARBON	
	R733	QRD167J-222	2.2K 1/6W CARBON	
	R734	QRD167J-222	2.2K 1/6W CARBON	
	R743	QRD167J-223	22K 1/6W CARBON	
	R744	QRD167J-103	10K 1/6W CARBON	
	R745	QRD167J-683	68K 1/6W CARBON	
	R747	QRD167J-153	15K 1/6W CARBON	
	R752	QRD167J-181	180 1/6W CARBON	
	R753	QRD167J-473	47K 1/6W CARBON	
	R754	QRD167J-332	3.3K 1/6W CARBON	
	R755	QRD167J-274	270K 1/6W CARBON	
	R756	QRD167J-622	6.2K 1/6W CARBON	
	R757	QRD167J-274	270K 1/6W CARBON	
	R758	QRD167J-103	10K 1/6W CARBON	
	R759	QRD167J-103	10K 1/6W CARBON	
	R760	QRD167J-472	4.7K 1/6W CARBON	
	R761	QRD167J-472	4.7K 1/6W CARBON	
△	R762	QRD14CJ-100S	10 1/4W UNF.CARBON	A
△	R762	QRZ0077-100	10 1/4W FUSIBLE	B
△	R762	QRZ0077-100	10 1/4W FUSIBLE	C
△	R763	QRD14CJ-100S	10 1/4W UNF.CARBON	A
△	R763	QRZ0077-100	10 1/4W FUSIBLE	B
△	R763	QRZ0077-100	10 1/4W FUSIBLE	C
	R790	QRD167J-123	12K 1/6W CARBON	
	R800	QRD167J-222	2.2K 1/6W CARBON	
	R803	QRD167J-132	1.3K 1/6W CARBON	
	R804	QRD167J-132	1.3K 1/6W CARBON	
	R805	QRD167J-222	2.2K 1/6W CARBON	
	R806	QRD167J-222	2.2K 1/6W CARBON	
	R807	QRD167J-473	47K 1/6W CARBON	
	R808	QRD167J-473	47K 1/6W CARBON	
	R809	QRD167J-474	470K 1/6W CARBON	
	R810	QRD167J-474	470K 1/6W CARBON	
	R811	QRD167J-393	39K 1/6W CARBON	
	R812	QRD167J-393	39K 1/6W CARBON	
	R813	QRD167J-112	1.1K 1/6W CARBON	
	R814	QRD167J-112	1.1K 1/6W CARBON	
	R815	QRD167J-152	1.5K 1/6W CARBON	
	R816	QRD167J-152	1.5K 1/6W CARBON	
	R817	QRD167J-104	100K 1/6W CARBON	
	R818	QRD167J-104	100K 1/6W CARBON	
	R819	QRD167J-681	680 1/6W CARBON	
	R820	QRD167J-681	680 1/6W CARBON	
	R821	QRD167J-103	10K 1/6W CARBON	
△	R822	QRD14CJ-1R0S	1 1/4W UNF.CARBON	
△	R823	QRD14CJ-2R7S	2.7 1/4W UNF.CARBON	A
	R823	QRZ0076-2R7	2.7 1/4W FUSIBLE	B
	R823	QRZ0076-2R7	2.7 1/4W FUSIBLE	C
	R824	QRD167J-103	10K 1/6W CARBON	
	R825	QRD167J-222	2.2K 1/6W CARBON	
	R826	QRD167J-103	10K 1/6W CARBON	
	R827	QRD167J-332	3.3K 1/6W CARBON	A
	R827	QRD167J-152	1.5K 1/6W CARBON	B
	R827	QRD167J-152	1.5K 1/6W CARBON	C
	R828	QRD167J-103	10K 1/6W CARBON	A
	R828	QRD167J-512	5.1K 1/6W CARBON	B
	R828	QRD167J-512	5.1K 1/6W CARBON	C
△	R829	QRD14CJ-1R0S	1 1/4W UNF.CARBON	
△	R830	QRD14CJ-1R0S	1 1/4W UNF.CARBON	
△	R831	QRD14CJ-1R0S	1 1/4W UNF.CARBON	
△	R832	QRD14CJ-100S	10 1/4W UNF.CARBON	A
△	R832	QRZ0077-100	10 1/4W FUSIBLE	B
△	R832	QRZ0077-100	10 1/4W FUSIBLE	C
△	R833	QRD14CJ-3R9S	3.9 1/4W UNF.CARBON	A
△	R833	QRZ0077-4R7	4.7 1/4W FUSIBLE	B
△	R833	QRZ0077-4R7	4.7 1/4W FUSIBLE	C
△	R834	QRD14CJ-3R9S	3.9 1/4W UNF.CARBON	A
△	R834	QRZ0077-4R7	4.7 1/4W FUSIBLE	B
△	R834	QRZ0077-4R7	4.7 1/4W FUSIBLE	C
	R835	QRD167J-103	10K 1/6W CARBON	
	R851	QRD167J-331	330 1/6W CARBON	
	R852	QRD167J-331	330 1/6W CARBON	
	R861	QRD167J-333	33K 1/6W CARBON	
	R862	QRD167J-333	33K 1/6W CARBON	
	R865	QRD167J-474	470K 1/6W CARBON	
	R866	QRD167J-474	470K 1/6W CARBON	
	R867	QRD167J-104	100K 1/6W CARBON	
	R868	QRD167J-104	100K 1/6W CARBON	
	R869	QRD167J-473	47K 1/6W CARBON	
	R870	QRD167J-473	47K 1/6W CARBON	
	R871	QRD167J-104	100K 1/6W CARBON	
	R872	QRD167J-104	100K 1/6W CARBON	
	R873	QRD167J-470	47 1/6W CARBON	
	R874	QRD167J-470	47 1/6W CARBON	
	R877	QRD167J-331	330 1/6W CARBON	
	R878	QRD167J-331	330 1/6W CARBON	
	R879	QRD167J-104	100K 1/6W CARBON	
	R880	QRD167J-104	100K 1/6W CARBON	
	R881	QRD167J-102	1K 1/6W CARBON	
	R882	QRD167J-103	10K 1/6W CARBON	
	R883	QRD167J-331	330 1/6W CARBON	
	R884	QRD167J-331	330 1/6W CARBON	
	R885	QRD167J-331	330 1/6W CARBON	
	R886	QRD167J-331	330 1/6W CARBON	
	R887	QRD167J-470	47 1/6W CARBON	

△ : SAFETY PARTS

Resistors

△	ITEM	PART NUMBER	DESCRIPTION			AREA
	R888	QRD167J-470	47	1/6W	CARBON	
	R889	QRD167J-103	10K	1/6W	CARBON	
	R890	QRD167J-103	10K	1/6W	CARBON	
	R891	QRD167J-473	47K	1/6W	CARBON	
	R892	QRD167J-473	47K	1/6W	CARBON	
	R893	QRD167J-332	3.3K	1/6W	CARBON	
	R894	QRD167J-332	3.3K	1/6W	CARBON	
	R895	QRD167J-221	220	1/6W	CARBON	
	R896	QRD167J-221	220	1/6W	CARBON	
	R897	QRD167J-224	220K	1/6W	CARBON	
	R898	QRD167J-224	220K	1/6W	CARBON	
	VR701	QVDC91Z-E02B			VARIABLE	
	VR801	QVAB80B-E54B	50K		VARIABLE	
	VR802	QVAA80W-E15B	100K		VARIABLE	
	VR803	QVAB80B-E14B	10K		VARIABLE	
	VR804	QVAB80B-EF5B	250K		VARIABLE	

△ : SAFETY PARTS

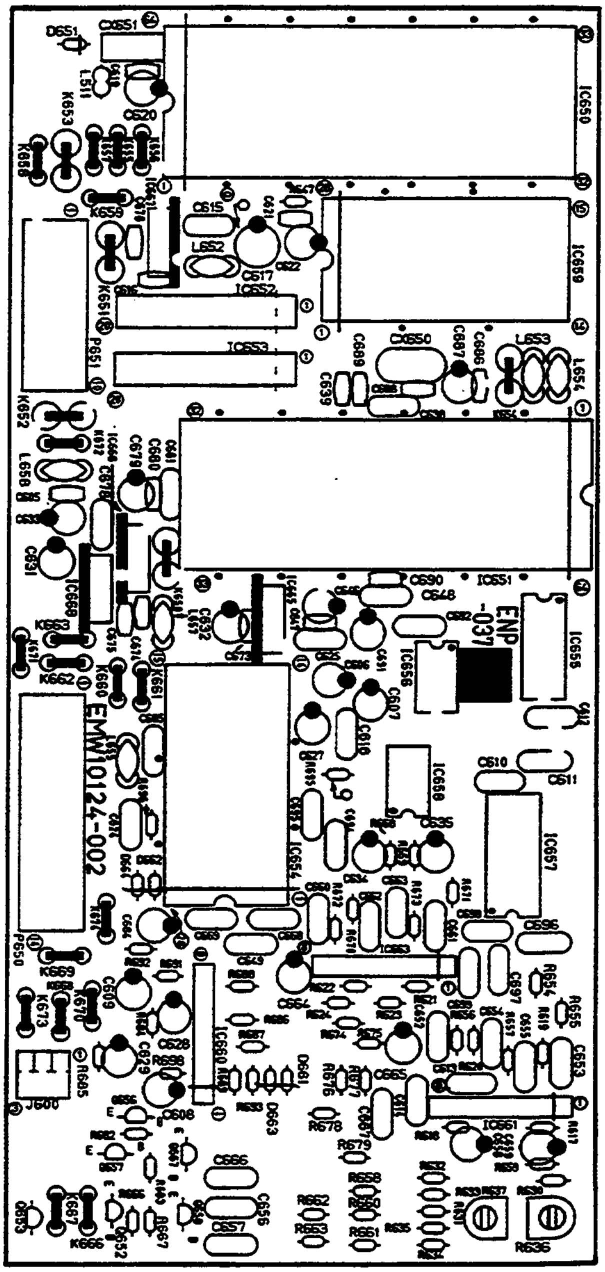
Others

△	ITEM	PART NUMBER	DESCRIPTION	AREA
		EMW10130-002	CIRCUIT BOARD	
		EWT031-025	TERMINAL WIRE	
	J500	EMN00TV-209A	2P PIN JACK	
	J510	EMN00TV-412A	4P PIN JACK	
	J511	EMN00TV-412A	4P PIN JACK	
	J601	EMN00YV-211A	2P PIN JACK	
	J611	EMN00YV-211A	2P PIN JACK	
	J802	EMV7122-004	CONNECTOR (4PIN)	
	J851	QMS3L10-ED0H	MINI JACK	
	J852	QMS3L10-ED0H	MINI JACK	
	J906	EMV7122-103	CONNECTOR (3PIN)	
	L503	EQL0001-R45	INDUCTOR	
	L504	EQL0001-R45	INDUCTOR	
	FW504	EWR33B-30LST	FLAT WIRE (3PIN)	
	FW511	EWR3AB-08LST	FLAT WIRE (10PIN)	
	FW512	EWR39B-13LST	FLAT WIRE (8PIN)	
	FW801	EWR36B-16LST	FLAT WIRE (6PIN)	
	FW802	EWR34B-20LST	FLAT WIRE (4PIN)	
	FW803	EWR36E-25SST	FLAT WIRE (6PIN)	
	JA503	EMV7125-015R	CONNECTOR (15PIN)	
	JA504	EMV7125-008R	CONNECTOR (8PIN)	
	JA505	EMV7125-012R	CONNECTOR (12PIN)	
	JA506	EMV7125-012R	CONNECTOR (12PIN)	
	JA509	EMV7125-009R	CONNECTOR (9PIN)	
	JT511	EMV7122-004	CONNECTOR (10PIN)	
	JT512	EMV7122-005	CONNECTOR (5PIN)	
	JT801	EMV7122-103	CONNECTOR (6PIN)	
	JT802	EMV7122-103	CONNECTOR (4PIN)	

△ : SAFETY PARTS

■ENP-037☐ DAP PC Board Ass'y

Note : ENP-037☐ varies according to the areas employed.
See note (1) when placing an order.



D651
CX651
L511
K653
C620
K668
IC650
C615
L652
C617
C622
IC652
IC653
IC659
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K661
P651
K652
L658
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C639
C687
C686
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CX650
C680
C679
C631
IC669
IC651
ENP-037
C690
C648
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IC655
K663
K662
K660
EMW10124-002
C607
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C611
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IC658
IC657
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D663
C665
J500
C608
C666
C656
C657
IC661
R678
R679
R662
R663
R661
R636
K667
K666

Note (1)

PC Board Ass'y	Designated Areas
ENP-037 A	the U.S.A., Canada
ENP-037 B	Australia, the U.K. Continental Europe Universal Type
ENP-037 C	Germany, Italy

Others

△	ITEM	PART NUMBER	DESCRIPTION	AREA
		EMW10124-002(S)	CIRCUIT BOARD	
		E3400-431	SPACER	B
		E3400-431	SPACER	C
	J600	EMV5111-003	PLUG ASSY	B
	J600	EMV5111-003	PLUG ASSY	C
	K650	ENZ8101-007	INDUCTOR	
	K651	ENZ8101-007	INDUCTOR	
	K652	ENZ8101-007	INDUCTOR	
	K653	ENZ8101-007	INDUCTOR	
	K654	ENZ8101-007	INDUCTOR	
	K655	ENZ8101-016	INDUCTOR	
	K656	ENZ8101-016	INDUCTOR	
	K657	ENZ8101-016	INDUCTOR	
	K658	ENZ8101-016	INDUCTOR	
	K659	ENZ8101-016	INDUCTOR	
	K660	ENZ8101-016	INDUCTOR	
	K661	ENZ8101-016	INDUCTOR	
	K662	ENZ8101-016	INDUCTOR	
	K663	ENZ8101-016	INDUCTOR	
	K666	ENZ8101-016	INDUCTOR	

△ : SAFETY PARTS

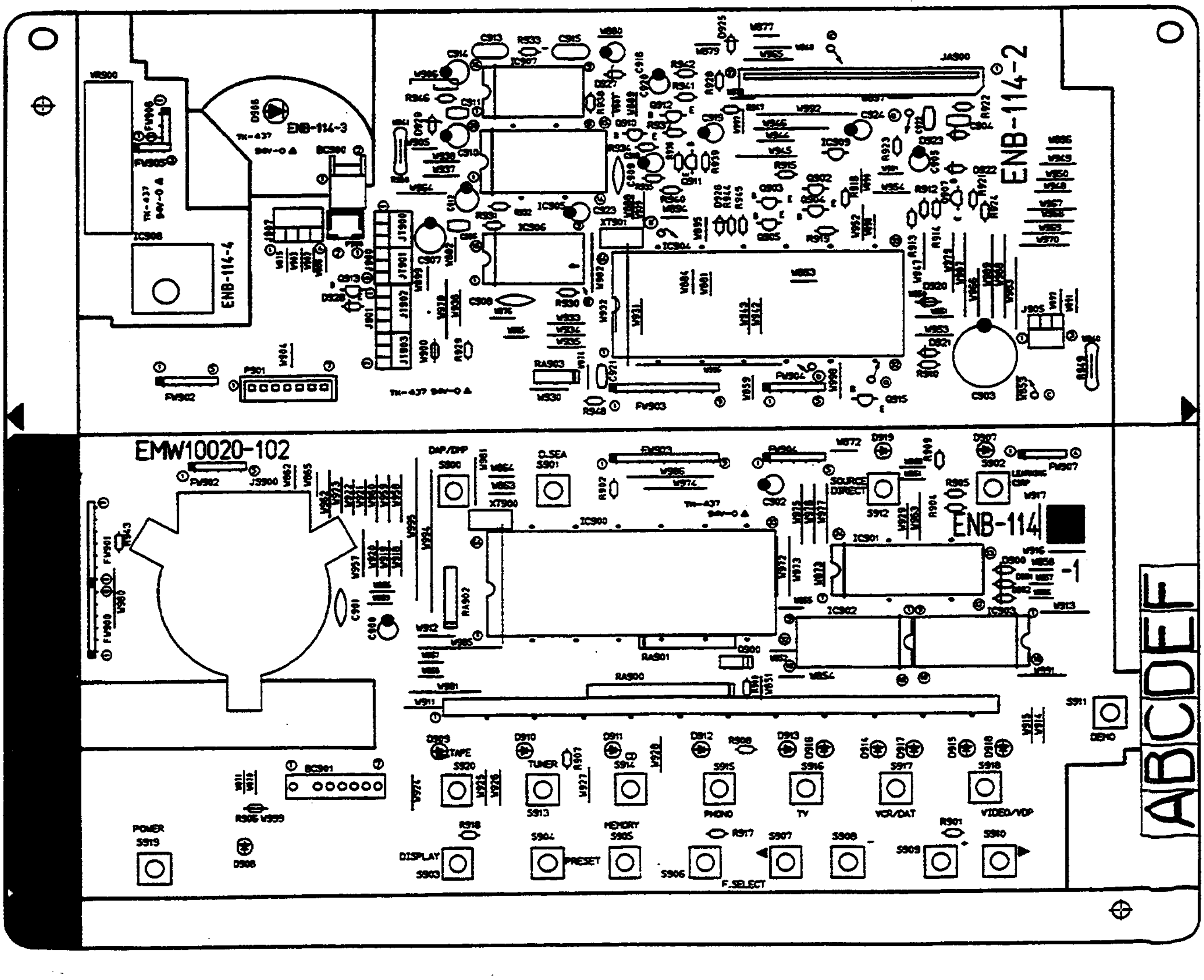
Others

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	K667	ENZ8101-016	INDUCTOR	
	K668	ENZ8101-016	INDUCTOR	
	K669	ENZ8101-016	INDUCTOR	
	K670	ENZ8101-016	INDUCTOR	
	K671	ENZ8101-016	INDUCTOR	
	K672	ENZ8101-016	INDUCTOR	
	K673	ENZ8101-016	INDUCTOR	
	K674	ENZ8101-016	INDUCTOR	
	L511	EQL4004-R22	INDUCTOR	
	L652	EQF0601-222	CERAMIC FILTER	
	L653	EQF0601-222	CERAMIC FILTER	
	L654	EQF0601-222	CERAMIC FILTER	
	L655	EQF0601-222	CERAMIC FILTER	
	L657	EQF0601-222	CERAMIC FILTER	
	L658	EQF0601-222	CERAMIC FILTER	
	P650	EMV7125-014R	CONNECTOR (14PIN)	
	P651	EMV7125-010R	CONNECTOR (10PIN)	
	CX650	ECX0180-000EF	RESONATOR	
	CX651	ECX0072-000EM	RESONATOR	

△ : SAFETY PARTS

■ENB-114☐ System & FL Control PC Board Ass'y

Note : ENB-114☐ varies according to the areas employed. See note (1) when placing an order.



ENB-114-2
ENB-114-3
ENB-114-4
ENB-114
-1
EMW10020-102
ABCDEF
IC900
IC901
IC902
IC903
IC904
IC905
IC906
IC907
IC908
JA900
TAPE
TUNER
PHONO
TV
VCR/DAT
VIDEO/VDP
POWER
DISPLAY
PRESET
MEMORY
F.SELECT
DAP/DRP
D.SEA
SOURCE DIRECT
DEMO

Transistors

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	Q652	2SD2144S(VW)	SILICON ROHM	
	Q653	2SD2144S(VW)	SILICON ROHM	
	Q656	2SD2144S(VW)	SILICON ROHM	
	Q657	2SD2144S(VW)	SILICON ROHM	
	Q658	DTA114YS	SILICON ROHM	
	Q667	DTA144ES	SILICON ROHM	

△ : SAFETY PARTS

I.C.s.

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	IC650	MN17581JNR	I.C. MATSUSHITA	
	IC651	LC83010N	I.C. SANYO	
	IC652	MB81464-12PSZ	I.C. FUJITSU	
	IC653	MB81464-12PSZ	I.C. FUJITSU	
	IC654	CS5339-KP	I.C. ASAHI KASEI	
	IC655	SM5818AS1	I.C. KANEMATSU	
	IC656	SM5807FS	I.C. KANEMATSU	
	IC657	PCM1700U	I.C. NIHONBARBURAUN	
	IC658	UPD6376GS	I.C. NEC	
	IC659	LH535949	I.C. SHARP	
	IC660	BA15218N	I.C. ROHM	
	IC661	VC4580L	I.C. DAINICHI	
	IC663	VC4580L	I.C. DAINICHI	
	IC665	NJM79M05FA	I.C. DAINICHI	
	IC666	NJM78M05FD	I.C. DAINICHI	
	IC667	NJM78M05FD	I.C. DAINICHI	
	IC668	NJM78M05FD	I.C. DAINICHI	

△ : SAFETY PARTS

Diodes

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	D651	1SS133	SILICON ROHM	
	D661	MTZ4.7JB	ZENER ROHM	
	D662	MTZ4.7JB	ZENER ROHM	
	D663	MTZ4.7JB	ZENER ROHM	
	D664	MTZ4.7JB	ZENER ROHM	

△ : SAFETY PARTS

Capacitors

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	C605	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C606	QETB1EM-476	47MF 25V ELECTRO	
	C607	QETB1EM-476	47MF 25V ELECTRO	
	C608	QETB1HM-475	4.7MF 50V ELECTRO	
	C609	QETB1HM-475	4.7MF 50V ELECTRO	
	C610	QFV81HJ-104	0.1MF 50V T.FILM	
	C611	QFV81HJ-104	0.1MF 50V T.FILM	
	C612	QFV81HJ-104	0.1MF 50V T.FILM	
	C613	QFV81HJ-104	0.1MF 50V T.FILM	
	C614	QFV81HJ-104	0.1MF 50V T.FILM	
	C615	QFV81HJ-104	0.1MF 50V T.FILM	
	C616	QCGB1HK-102	1000PF 50V CERAMIC	
	C617	QETB1AM-227	220MF 10V ELECTRO	
	C618	QFV81HJ-104	0.1MF 50V T.FILM	
	C619	QCGB1HK-102	1000PF 50V CERAMIC	
	C620	QETB1AM-107	100MF 10V ELECTRO	
	C621	QCGB1HK-102	1000PF 50V CERAMIC	
	C622	QETB1AM-107	100MF 10V ELECTRO	
	C624	QCZ0205-155	1.5MF 25V CERAMIC	
	C625	QFV81HJ-104	0.1MF 50V T.FILM	
	C627	QETB1EM-106	10MF 25V ELECTRO	
	C628	QETB1EM-106	10MF 25V ELECTRO	
	C629	QETB1EM-106	10MF 25V ELECTRO	
	C631	EEZ5009-474	0.47MF ELECTRO	
	C632	EEZ5009-474	0.47MF ELECTRO	
	C633	QEHC1AM-107	100MF 10V ELECTRO	
	C634	QETB1EM-106	10MF 25V ELECTRO	
	C635	QETB1EM-106	10MF 25V ELECTRO	
	C638	QFV81HJ-104	0.1MF 50V T.FILM	
	C639	QCSB1HJ-680	68PF 50V CERAMIC	
	C646	QETB1AM-107	100MF 10V ELECTRO	
	C647	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C648	QFV81HJ-104	0.1MF 50V T.FILM	
	C649	QCZ0205-155	1.5MF 25V CERAMIC	
	C652	QFN81HJ-103	0.01MF 50V MYLAR	
	C653	QFN81HJ-103	0.01MF 50V MYLAR	
	C654	QFN81HJ-222	2200PF 50V MYLAR	
	C655	QFN81HJ-222	2200PF 50V MYLAR	
	C656	QFN81HJ-223	0.022MF 50V MYLAR	
	C657	QFN81HJ-223	0.022MF 50V MYLAR	
	C658	QETB1HM-226	22MF 50V ELECTRO	
	C659	QETB1HM-226	22MF 50V ELECTRO	
	C660	QFN81HJ-103	0.01MF 50V MYLAR	
	C661	QFN81HJ-103	0.01MF 50V MYLAR	
	C662	QFN81HJ-222	2200PF 50V MYLAR	

△ : SAFETY PARTS

Capacitors

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	C663	QFN81HJ-222	2200PF 50V MYLAR	
	C664	QETB1EM-226	22MF 25V ELECTRO	
	C665	QETB1EM-226	22MF 25V ELECTRO	
	C666	QFN81HJ-223	0.022MF 50V MYLAR	
	C667	QFN81HJ-223	0.022MF 50V MYLAR	
	C668	QFN81HJ-103	0.01MF 50V MYLAR	
	C669	QFN81HJ-103	0.01MF 50V MYLAR	
	C673	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C674	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C675	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C676	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C678	QFV81HJ-104	0.1MF 50V T.FILM	
	C679	QEHC1AM-107	100MF 10V ELECTRO	
	C680	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C681	QFV81HJ-104	0.1MF 50V T.FILM	
	C684	QETB1EM-106	10MF 25V ELECTRO	
	C685	QCZ0205-155	1.5MF 25V CERAMIC	
	C686	QCGB1HK-102	1000PF 50V CERAMIC	
	C687	QETB1AM-107	100MF 10V ELECTRO	
	C688	QCT30CH-180	18PF 50V CERAMIC	
	C689	QCT30CH-180	18PF 50V CERAMIC	
	C690	QCGB1HK-102	1000PF 50V CERAMIC	
	C691	QETB1AM-107	100MF 10V ELECTRO	
	C692	QCZ0205-155	1.5MF 25V CERAMIC	
	C694	QCZ0205-155	1.5MF 25V CERAMIC	
	C695	QCZ0205-155	1.5MF 25V CERAMIC	
	C696	QFV81HJ-104	0.1MF 50V T.FILM	
	C697	QFV81HJ-104	0.1MF 50V T.FILM	
	C698	QFV81HJ-104	0.1MF 50V T.FILM	
	C699	QFV81HJ-104	0.1MF 50V T.FILM	

△ : SAFETY PARTS

Resistors

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	R617	QRD167J-621	620 1/6W CARBON	
	R618	QRD167J-621	620 1/6W CARBON	
	R619	QRD167J-821	820 1/6W CARBON	
	R620	QRD167J-821	820 1/6W CARBON	
	R621	QRD167J-183	18K 1/6W CARBON	
	R622	QRD167J-183	18K 1/6W CARBON	
	R623	QRD167J-821	820 1/6W CARBON	
	R624	QRD167J-821	820 1/6W CARBON	
	R630	QRD167J-184	180K 1/6W CARBON	
	R631	QRD167J-184	180K 1/6W CARBON	
	R632	QRD167J-102	1K 1/6W CARBON	
	R633	QRD167J-102	1K 1/6W CARBON	
	R634	QRD167J-102	1K 1/6W CARBON	
	R635	QRD167J-102	1K 1/6W CARBON	
	R636	QVPA601-104A	100K VARIABLE	
	R637	QVPA601-104A	100K VARIABLE	
	R647	QRD167J-103	10K 1/6W CARBON	
	R654	QRD167J-821	820 1/6W CARBON	
	R655	QRD167J-821	820 1/6W CARBON	
	R656	QRD167J-821	820 1/6W CARBON	
	R657	QRD167J-821	820 1/6W CARBON	
	R658	QRD167J-273	27K 1/6W CARBON	
	R659	QRD167J-273	27K 1/6W CARBON	
	R660	QRD167J-271	270 1/6W CARBON	
	R661	QRD167J-271	270 1/6W CARBON	
	R662	QRD167J-271	270 1/6W CARBON	
	R663	QRD167J-271	270 1/6W CARBON	
	R666	QRD167J-103	10K 1/6W CARBON	
	R667	QRD167J-103	10K 1/6W CARBON	
	R668	QRD167J-104	100K 1/6W CARBON	
	R669	QRD167J-104	100K 1/6W CARBON	
	R670	QRD167J-821	820 1/6W CARBON	
	R671	QRD167J-821	820 1/6W CARBON	
	R672	QRD167J-821	820 1/6W CARBON	
	R673	QRD167J-821	820 1/6W CARBON	
	R674	QRD167J-273	27K 1/6W CARBON	
	R675	QRD167J-273	27K 1/6W CARBON	
	R676	QRD167J-391	390 1/6W CARBON	
	R677	QRD167J-391	390 1/6W CARBON	
	R678	QRD167J-181	180 1/6W CARBON	
	R679	QRD167J-181	180 1/6W CARBON	
	R682	QRD167J-103	10K 1/6W CARBON	
	R683	QRD167J-103	10K 1/6W CARBON	
	R684	QRD167J-221	220 1/6W CARBON	
	R685	QRD167J-221	220 1/6W CARBON	
	R686	QRD167J-473	47K 1/6W CARBON	
	R687	QRD167J-473	47K 1/6W CARBON	
	R688	QRD167J-473	47K 1/6W CARBON	
	R689	QRD167J-473	47K 1/6W CARBON	
	R690	QRD167J-273	27K 1/6W CARBON	
	R691	QRD167J-273	27K 1/6W CARBON	
	R692	QRD167J-221	220 1/6W CARBON	
	R693	QRD167J-221	220 1/6W CARBON	
	R695	QRD167J-103	10K 1/6W CARBON	
	R696	QRD167J-100	10 1/6W CARBON	

△ : SAFETY PARTS

Note (1)

PC Board Ass'y	Designated Areas
ENB-114 B	the U.S.A., Canada
ENB-114 C	Australia, Universal Type Continental Europe
ENB-114 D	Germany, Italy
ENB-114 E	the U.K.

Transistors

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	Q900	DTC114TFF	SILICON ROHM	
	Q902	DTC144TS	SILICON ROHM	
	Q903	DTC144ES	SILICON ROHM	
	Q904	DTC144ES	SILICON ROHM	
	Q905	DTC144ES	SILICON ROHM	
	Q907	DTC144ES	SILICON ROHM	
	Q910	2SC1685(R,S)	SILICON MATSUSHITA	
	Q911	2SC1685(R,S)	SILICON MATSUSHITA	
	Q912	2SC1685(R,S)	SILICON MATSUSHITA	
	Q913	DTC144ES	SILICON ROHM	
	Q915	DTC143TS	SILICON ROHM	

△ : SAFETY PARTS

I.C.s.

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	IC900	MN171202JPB	I.C. MATSUSHITA	
	IC901	TC74HC154AP	I.C. TOSHIBA	
	IC902	MSL915ARS	I.C. NIHON DENSO	
	IC903	MSL915ARS	I.C. NIHON DENSO	
	IC904	MN171202JPA	I.C. MATSUSHITA	
	IC905	TC9164N	I.C. TOSHIBA	
	IC906	UPD7001C	I.C. NEC	
	IC907	XR-1091DCP	I.C. EXAR JAPAN	
	IC908	GP1U501X	I.C. SHARP	
	IC909	MN1281(P,Q)	I.C. MATSUSHITA	

△ : SAFETY PARTS

Diodes

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	D900	1SS133	SILICON ROHM	
	D901	1SS133	SILICON ROHM	
	D902	1SS133	SILICON ROHM	
	D906	LN282RPX	L.E.D.	
	D907	SLH-34VC3F	L.E.D. ROHM	
	D908	SLH-34VC3F	L.E.D. ROHM	B
	D908	SLH-34VC3F	L.E.D. ROHM	C
	D908	SLH-34VC3F	L.E.D. ROHM	D
	D908	SLA-580LT3F	L.E.D. ROHM	E
	D909	SLH-34VC3F	L.E.D. ROHM	
	D910	SLH-34VC3F	L.E.D. ROHM	
	D911	SLH-34VC3F	L.E.D. ROHM	
	D912	SLH-34VC3F	L.E.D. ROHM	
	D913	SLH-34VC3F	L.E.D. ROHM	
	D914	SLH-34VC3F	L.E.D. ROHM	
	D915	SLH-34VC3F	L.E.D. ROHM	
	D916	SLH-34DC3F	L.E.D. ROHM	
	D917	SLH-34DC3F	L.E.D. ROHM	
	D918	SLH-34DC3F	L.E.D. ROHM	
	D919	SLH-34VC3F	L.E.D. ROHM	
	D920	1SS133	SILICON ROHM	
	D921	1SS133	SILICON ROHM	
	D922	1SS133	SILICON ROHM	
	D923	1SS133	SILICON ROHM	
	D925	1SS133	SILICON ROHM	
	D926	1SS133	SILICON ROHM	
	D927	MTZ5.1JC	ZENER ROHM	
	D928	1SS133	SILICON ROHM	
	D929	MTZ5.1JB	ZENER ROHM	

△ : SAFETY PARTS

Capacitors

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	C900	QER51HM-105G	1MF 50V ELECTRO	
	C901	QCF21HP-223	0.022MF 50V CERAMIC	
	C902	QETB0JM-227	220MF 6.3V ELECTRO	
	C903	EEZ0502-479	47000MF 5.5V ELECTRO	
	C904	QCBB1HK-471	470PF 50V CERAMIC	
	C905	QEK51HM-474G	0.47MF 50V ELECTRO	
	C906	QCVB1CM-103	0.01MF 16V CERAMIC	
	C907	QETB1CM-107	100MF 16V ELECTRO	
	C908	QCS21HJ-470	47PF 50V CERAMIC	
	C909	QCS21HJ-561	560PF 50V CERAMIC	
	C910	QETB1CM-476	47MF 16V ELECTRO	
	C911	QCVB1CM-103	0.01MF 16V CERAMIC	
	C912	QETB1CM-476	47MF 16V ELECTRO	
	C913	QFV81HJ-104	0.1MF 50V T.FILM	
	C914	QETB1CM-476	47MF 16V ELECTRO	
	C915	QFN81HJ-102	1000PF 50V MYLAR	
	C916	QEK51HM-474G	0.47MF 50V ELECTRO	
	C918	QEK51HM-474G	0.47MF 50V ELECTRO	
	C919	QEK51CM-106G	10MF 16V ELECTRO	
	C920	QEK51HM-105G	1MF 50V ELECTRO	
	C921	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C922	QCVB1CM-103	0.01MF 16V CERAMIC	
	C923	QEK51HM-105G	1MF 50V ELECTRO	
	C924	QEK51CM-106G	10MF 16V ELECTRO	

△ : SAFETY PARTS

Resistors

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	R900	QRD167J-473	47K 1/6W CARBON	
	R901	QRD167J-103	10K 1/6W CARBON	
	R902	QRD167J-103	10K 1/6W CARBON	
	R904	QRD167J-821	820 1/6W CARBON	
	R905	QRD167J-331	330 1/6W CARBON	
	R906	QRD167J-331	330 1/6W CARBON	B
	R906	QRD167J-331	330 1/6W CARBON	C
	R906	QRD167J-331	330 1/6W CARBON	D
	R906	QRD167J-471	470 1/6W CARBON	E
	R907	QRD167J-331	330 1/6W CARBON	
	R908	QRD167J-331	330 1/6W CARBON	
	R909	QRD167J-331	330 1/6W CARBON	
	R910	QRD167J-470	47 1/6W CARBON	
	R912	QRD167J-103	10K 1/6W CARBON	
	R913	QRD167J-103	10K 1/6W CARBON	
	R914	QRD167J-103	10K 1/6W CARBON	
	R915	QRD167J-221	220 1/6W CARBON	
	R916	QRD167J-103	10K 1/6W CARBON	
	R917	QRD167J-103	10K 1/6W CARBON	
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	R919	QRD167J-103	10K 1/6W CARBON	
	R921	QRD167J-221	220 1/6W CARBON	
	R922	QRD167J-473	47K 1/6W CARBON	
	R923	QRD167J-103	10K 1/6W CARBON	
	R924	QRD167J-223	22K 1/6W CARBON	
	R929	QRD167J-223	22K 1/6W CARBON	
	R930	QRD167J-273	27K 1/6W CARBON	
	R931	QRD167J-223	22K 1/6W CARBON	
	R932	QRD167J-223	22K 1/6W CARBON	
	R933	QRD167J-152	1.5K 1/6W CARBON	
	R934	QRD167J-104	100K 1/6W CARBON	
	R935	QRD167J-473	47K 1/6W CARBON	
	R936	QRD167J-103	10K 1/6W CARBON	
	R937	QRD167J-273	27K 1/6W CARBON	
	R938	QRD167J-562	5.6K 1/6W CARBON	
	R939	QRD167J-473	47K 1/6W CARBON	
	R940	QRD167J-153	15K 1/6W CARBON	
	R941	QRD167J-105	1M 1/6W CARBON	
	R942	QRD167J-102	1K 1/6W CARBON	
	R943	QRD167J-103	10K 1/6W CARBON	
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	R946	QRD167J-241	240 1/6W CARBON	
	R947	QRD167J-222	2.2K 1/6W CARBON	
	R948	QRD167J-121	120 1/6W CARBON	
△	R949	QRD14CJ-2R7S	2.7 1/4W UNF.CARBON	B
△	R949	QRZ0077-4R7	4.7 1/4W FUSIBLE	C
△	R949	QRZ0077-4R7	4.7 1/4W FUSIBLE	D
△	R949	QRZ0077-4R7	4.7 1/4W FUSIBLE	E
	RA902	QRB069J-103	10K 1/10W R.NETWORK	
	RA903	QRB049J-103	10K 1/10W R.NETWORK	
	VR900	QVXA01W-E15B	100K VARIBLE	

△ : SAFETY PARTS

Others

△	ITEM	PART NUMBER	DESCRIPTION	AREA
		EMW10020-102	CIRCUIT BOARD	
		E3400-431	SPACER	
		EWS243-039	SOCKET WIRE	C
		EWS243-039	SOCKET WIRE	D
		EWS243-039	SOCKET WIRE	E
	J905	EMV7122-103	CONNECTOR(3PIN)	
	J907	EMV7122-004	CONNECTOR(4PIN)	
	P900	EMV5103-002A	PLUG ASSY(2PIN)	
	P901	EMV5133-007	PLUG ASSY(7PIN)	
	S900	ESP0001-018	TACT SWITCH(DAP)	
	S901	ESP0001-018	TACT SWITCH(SEA)	
	S902	ESP0001-018	TACT SWITCH(CSRP)	
	S903	ESP0001-018	TACT SWITCH(DISPLAY)	
	S904	ESP0001-018	TACT SWITCH(PRESET)	
	S905	ESP0001-018	TACT SWITCH(MEMORY)	
	S906	ESP0001-018	TACT SWITCH(P.SELECT)	
	S907	ESP0001-018	TACT SWITCH(◀)	
	S908	ESP0001-018	TACT SWITCH(DOWN)	
	S909	ESP0001-018	TACT SWITCH(UP)	
	S910	ESP0001-018	TACT SWITCH(▶)	
	S911	ESP0001-018	TACT SWITCH(DEMO)	
	S912	ESP0001-018	TACT SWITCH(S.DIRECT)	
	S913	ESP0001-018	TACT SWITCH(TUNER)	
	S914	ESP0001-018	TACT SWITCH(CD)	
	S915	ESP0001-018	TACT SWITCH(PHONO)	
	S916	ESP0001-018	TACT SWITCH(TV)	
	S917	ESP0001-018	TACT SWITCH(VCR/DAT)	
	S918	ESP0001-018	TACT SWITCH(VIDEO/VDP)	
	S919	ESP0001-018	TACT SWITCH(POWER)	
	S920	ESP0001-018	TACT SWITCH(TAPE)	
	BC900	EMV5103-002B	PLUG ASSY(2PIN)	
	EC901	EWS247-008	SOCKET WIRE(7PIN)	
	FL900	ELU0001-123	FL TUBE	
	FS900	E306305-007	FELT SPACER	
	FW900	EWR36B-13LST	FLAT WIRE(6PIN)	
	FW901	EWR37B-13LST	FLAT WIRE(7PIN)	
	FW902	EWR35B-08SST	FLAT WIRE(5PIN)	
	FW903	EWR39B-08SST	FLAT WIRE(9PIN)	
	FW904	EWR35B-08SST	FLAT WIRE(5PIN)	
	FW905	EWR33B-13LST	FLAT WIRE(3PIN)	
	FW906	EWR33B-13LST	FLAT WIRE(3PIN)	
	FW907	EWR34B-25LST	FLAT WIRE(4PIN)	
	UA900	EMV7123-037	CONNECTOR(37PIN)	
	US900	ENZ2401-001	WIRE WOUND VARI.RESISTOR	
	UT900	EMV7122-103	CONNECTOR(3PIN)	
	UT901	EMV7122-103	CONNECTOR(3PIN)	
	UT902	EMV7122-004	CONNECTOR(4PIN)	
	UT903	EMV7122-103	CONNECTOR(3PIN)	
	XT900	ECX0060-000EM	RESONATOR	
	XT901	ECX0060-000EM	RESONATOR	

△ : SAFETY PARTS

AX-MX90BK

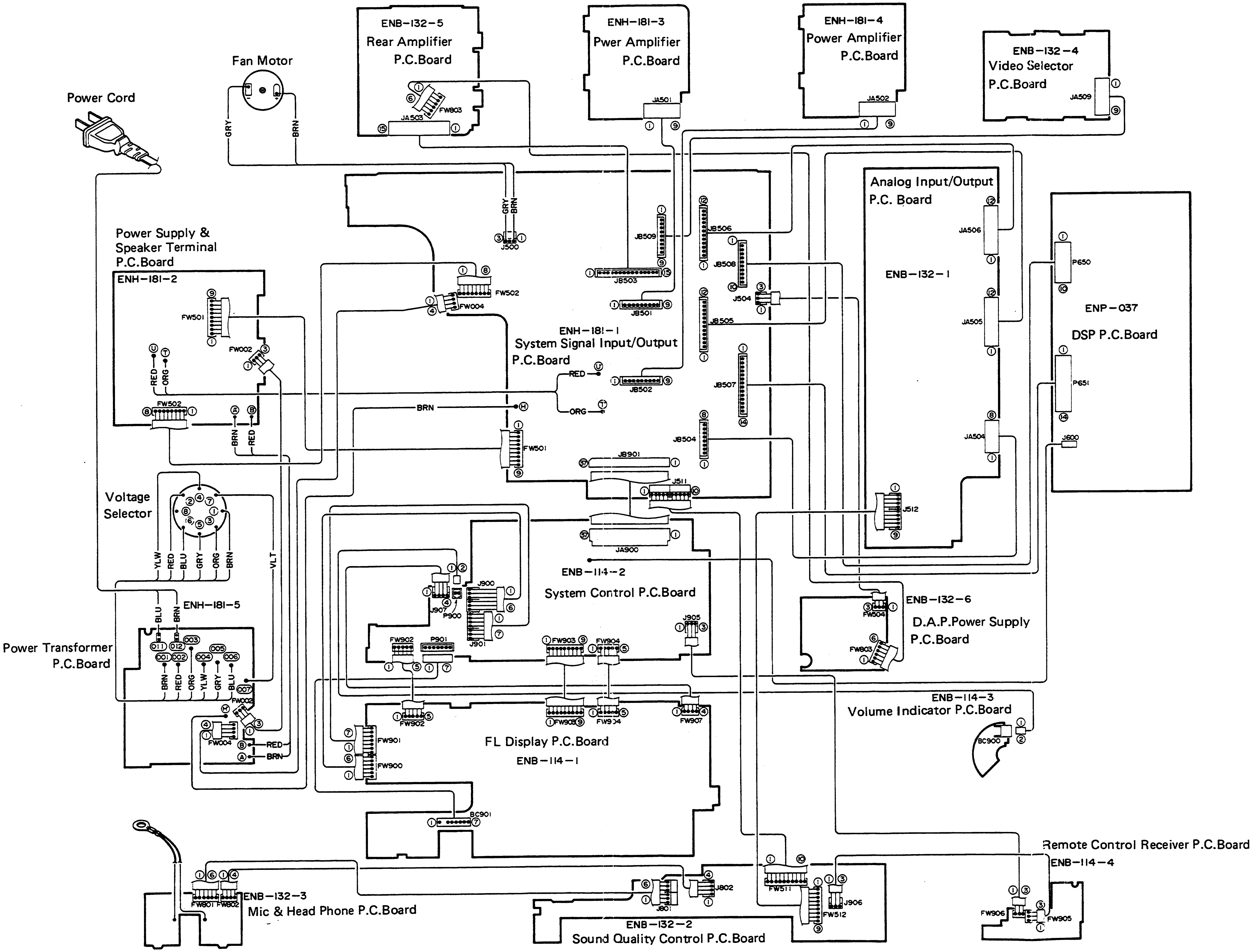
JVC

VICTOR COMPANY OF JAPAN, LIMITED
AUDIO PRODUCTS DIVISION, 1644, SHIMOTSURUMA, YAMATO-SHI, KANAGAWA-KEN, 242, JAPAN

Printed in Japan
9106[S]

(No. 20269)

Connection Diagram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P.C.Board
JA502
ENB-132-4
Video Selector
P.C.Board
JA509
Fan Motor
GRY
BRN
Power Cord
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JB503
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J504
JB501
JB505
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JB507
JB504
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Speaker Terminal
P.C.Board
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FW002
RED
ORG
FW502
FW004
ENH-181-1
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P.C.Board
Analog Input/Output
P.C. Board
JA506
ENB-132-1
JA505
JA504
J512
ENP-037
DSP P.C.Board
P650
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J600
JB901
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Selector
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J905
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P.C.Board
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P.C.Board
ENB-114-3
Volume Indicator P.C.Board
BC900
FW007
FW902
FW905
FW904
FW907
FW901
FW900
FL Display P.C.Board
ENB-114-1
BC901
Remote Control Receiver P.C.Board
ENB-114-4
FW906
FW905
FW801
FW802
ENB-132-3
Mic & Head Phone P.C.Board
J801
J802
FW511
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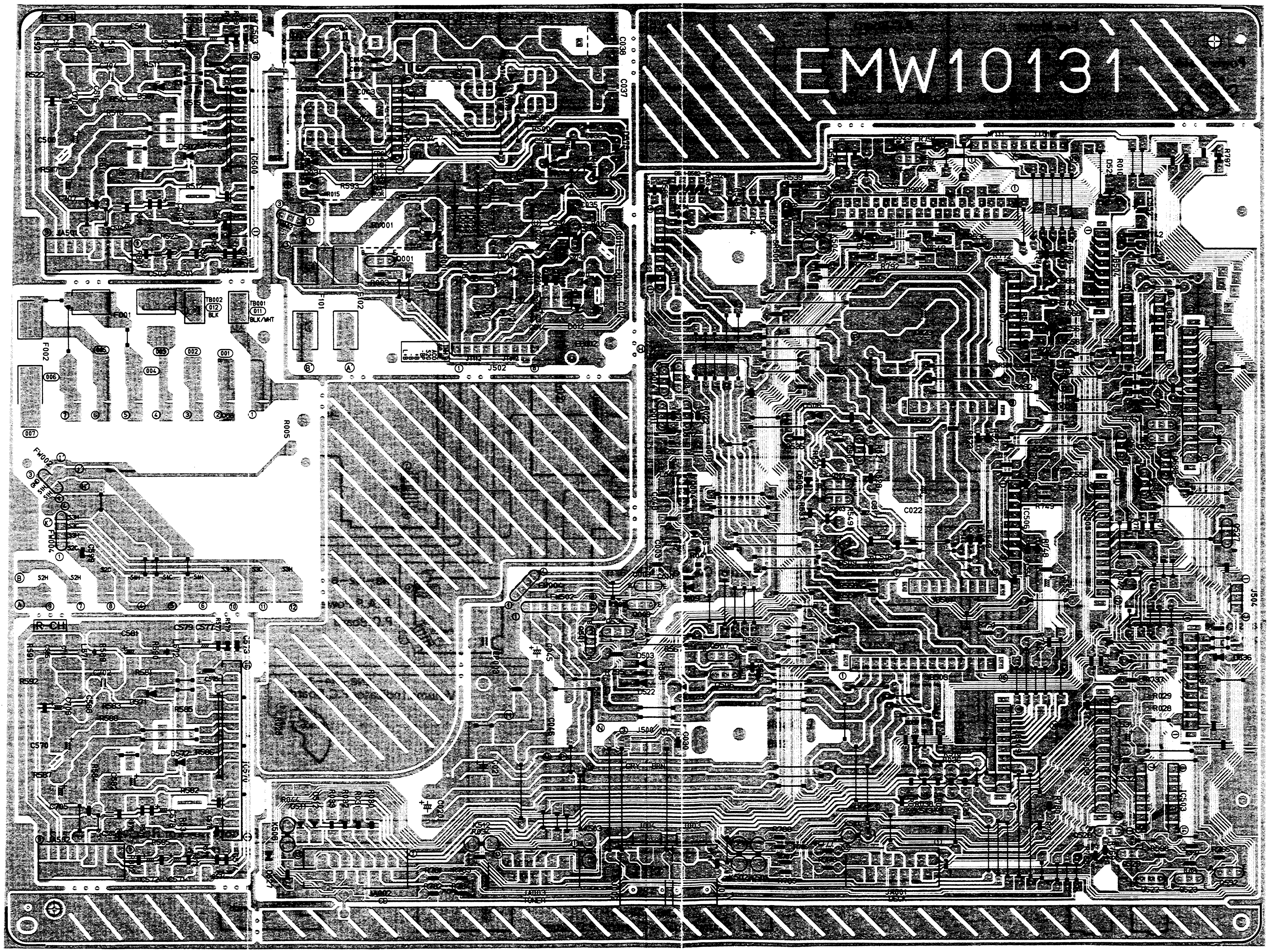
ENB-132-2
Sound Quality Control P.C.Board

Printed Circuit Boards

■ Front Amplifier & Power Primary P.C. Board (ENH-181)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5. Power Primary Section

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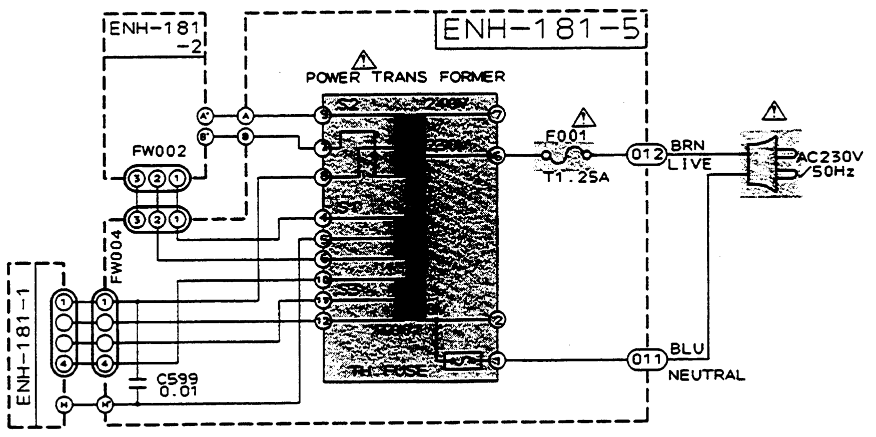
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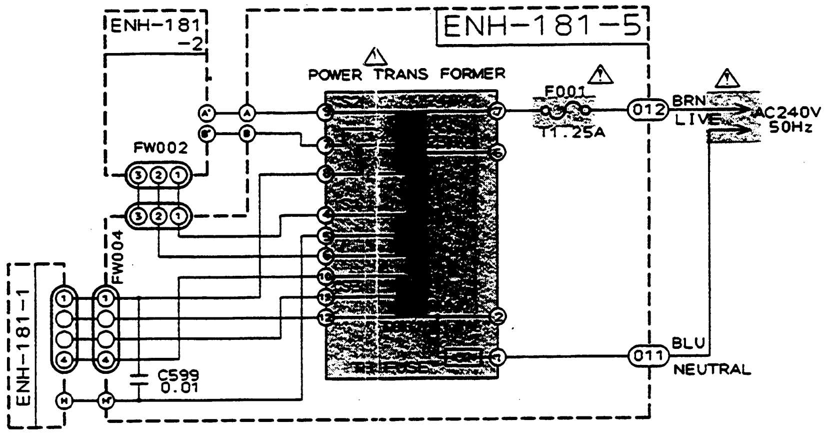
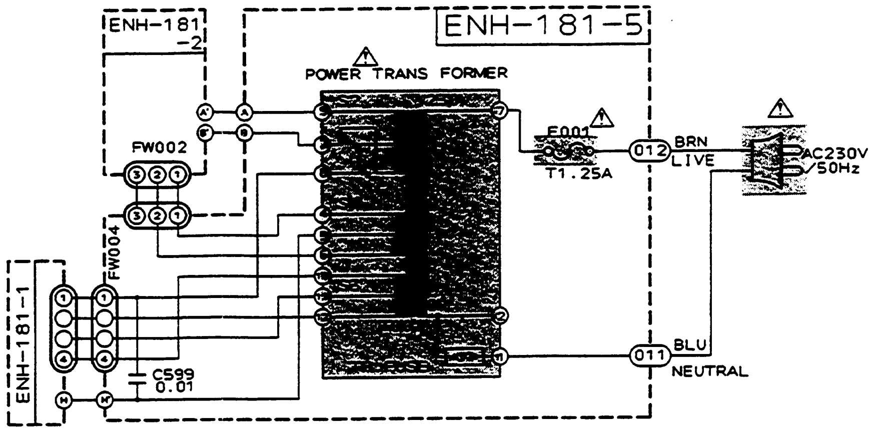
T1-FUSE

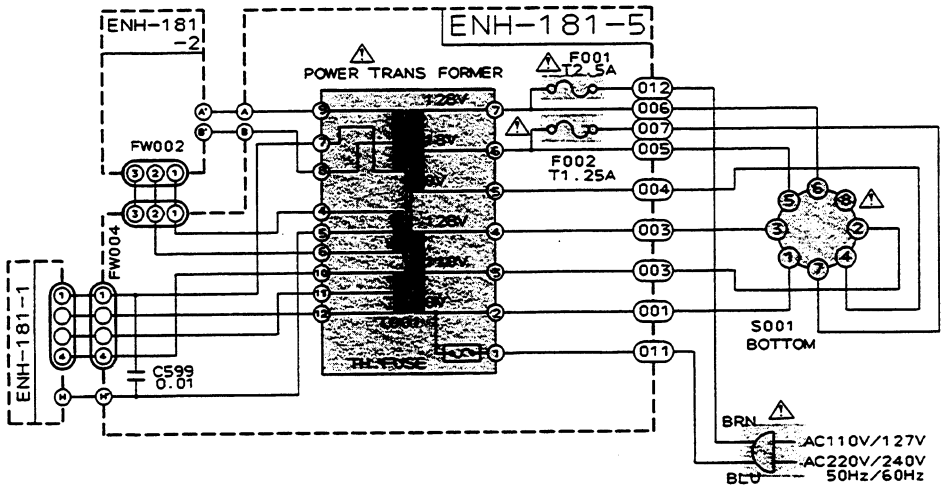
(BS, A) BS FOR U.K. A FOR AUSTRALIA


ENH-181-2
ENH-181-5
POWER TRANS FORMER
FW002
FW004
ENH-181-1
F001
T1.25A
012
011
BRN
LIVE
BLU
NEUTRAL
AC240V
50Hz
C599
0.01
T1-FUSE

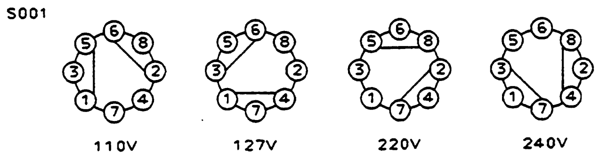
(G, GI) G FOR GERMANY GI FOR ITALY


ENH-181-2
ENH-181-5
POWER TRANS FORMER
FW002
FW004
ENH-181-1
F001
T1.25A
012
011
BRN
LIVE
BLU
NEUTRAL
AC230V
50Hz
C599
0.01

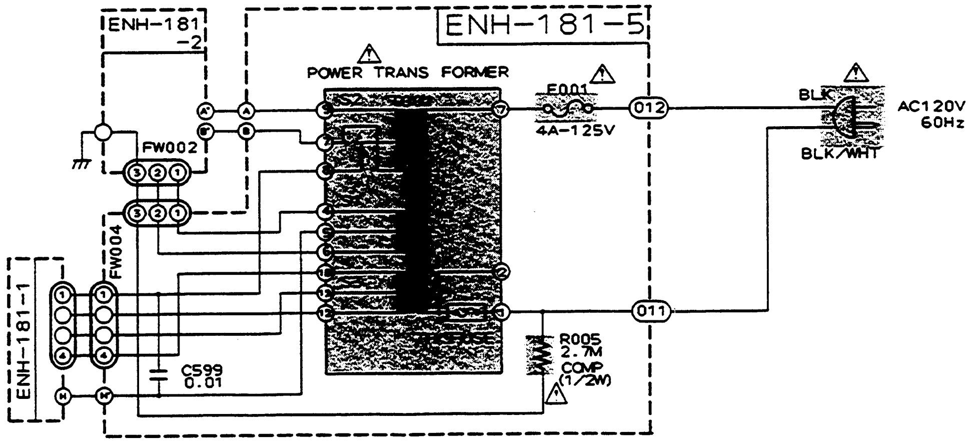
(U) FOR OTHER COUNTRIES


ENH-181-2
ENH-181-5
POWER TRANS FORMER
FW002
FW004
ENH-181-1
F001
T2.5A
F002
T1.25A
012
006
007
005
004
003
003
001
011
S001
BOTTOM
BRN
BLU
AC110V/127V
AC220V/240V
50Hz/60Hz
C599
0.01
T1-FUSE

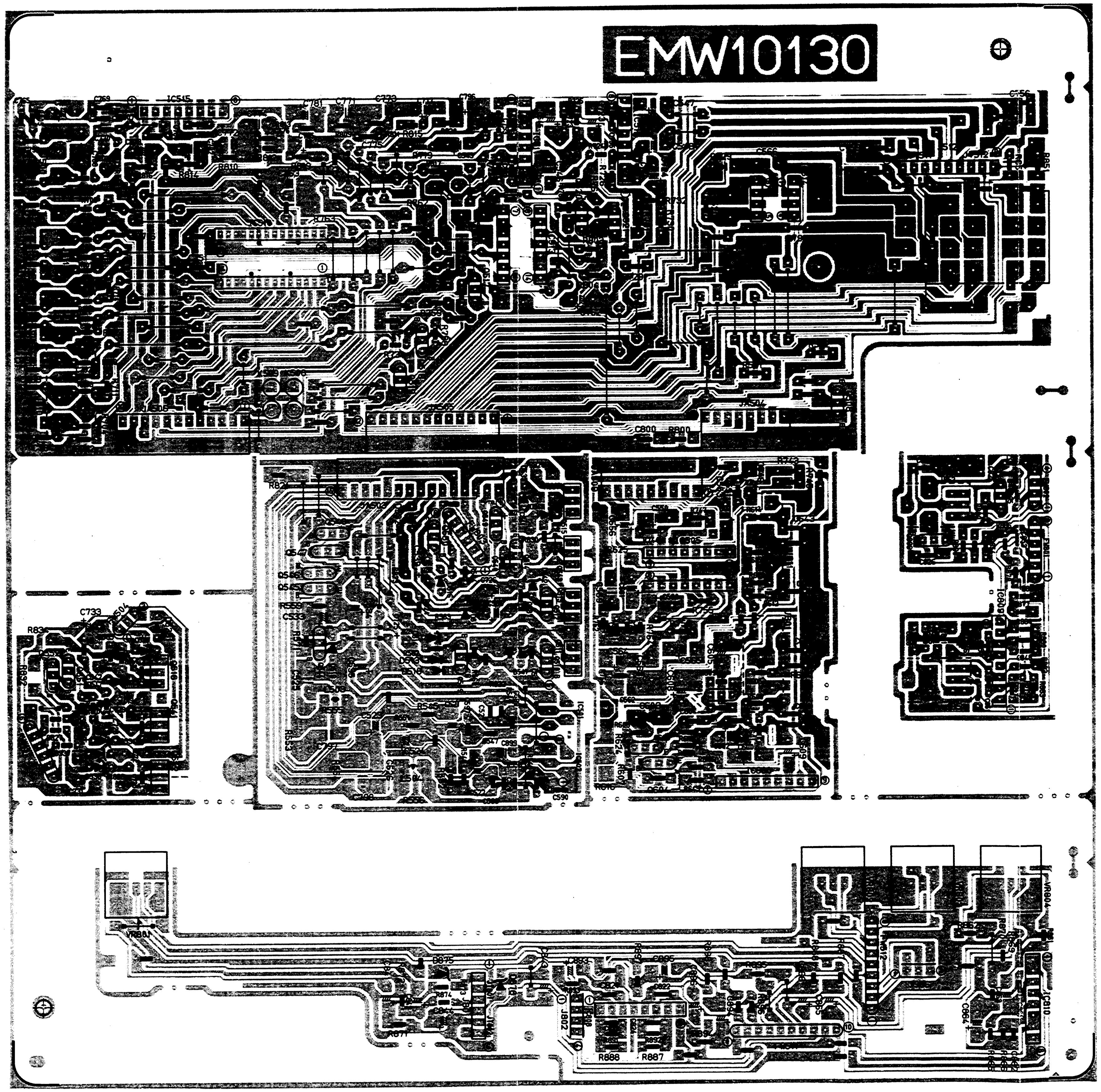
VOLTAGE SELECTOR CONNECTION


S001
110V
127V
220V
240V

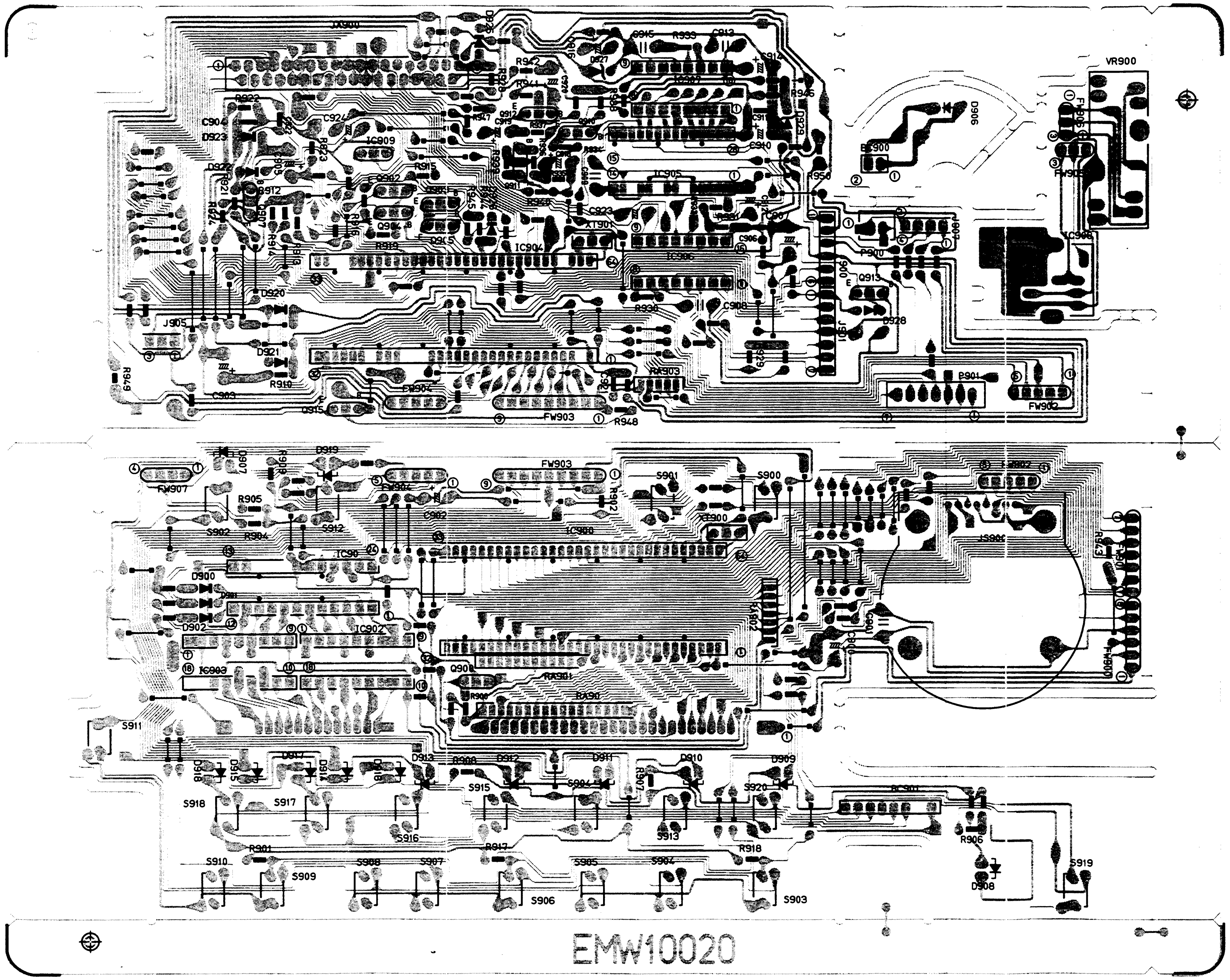
(J, C) J FOR U.S.A. C FOR CANADA


ENH-181-2
ENH-181-5
POWER TRANS FORMER
FW002
FW004
ENH-181-1
F001
4A-125V
012
011
BLK
BLK/WHT
AC120V
60Hz
R005
2.7M
COMP
(1/2W)
C599
0.01

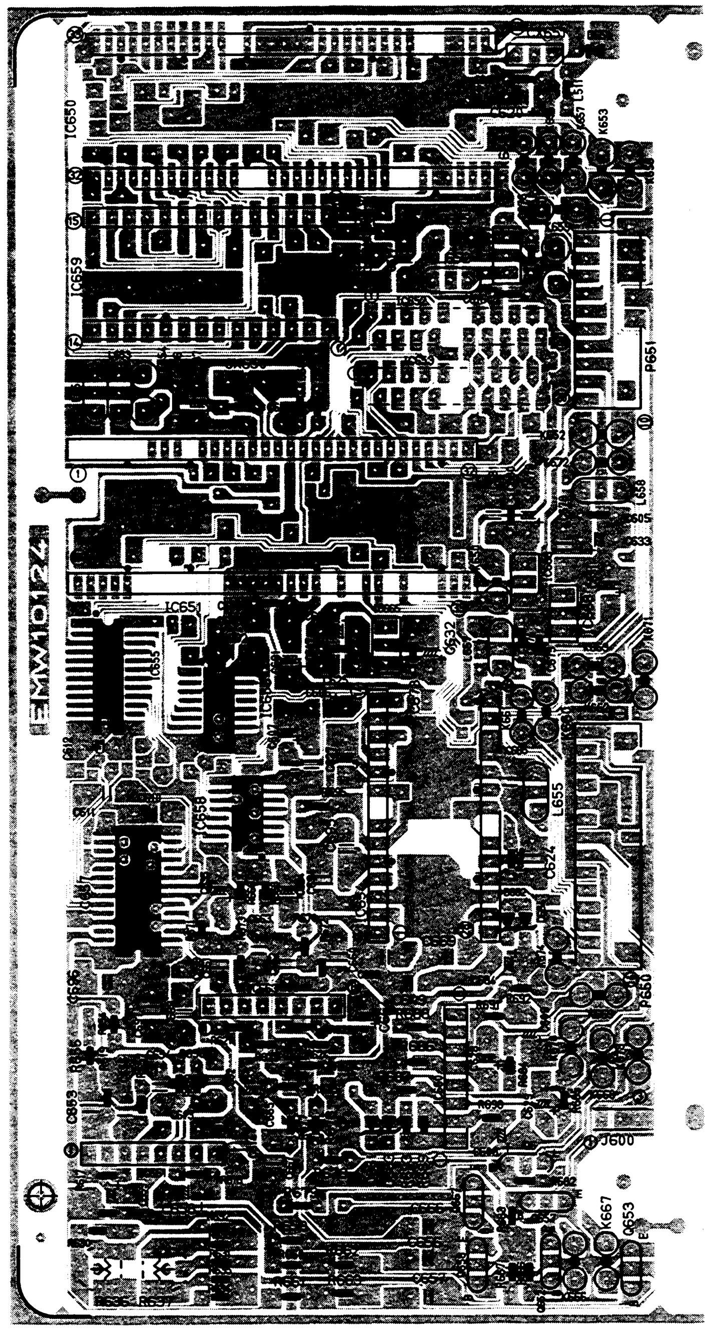
■ Rear Amplifer & Source Select P.C.Board (ENB-132)



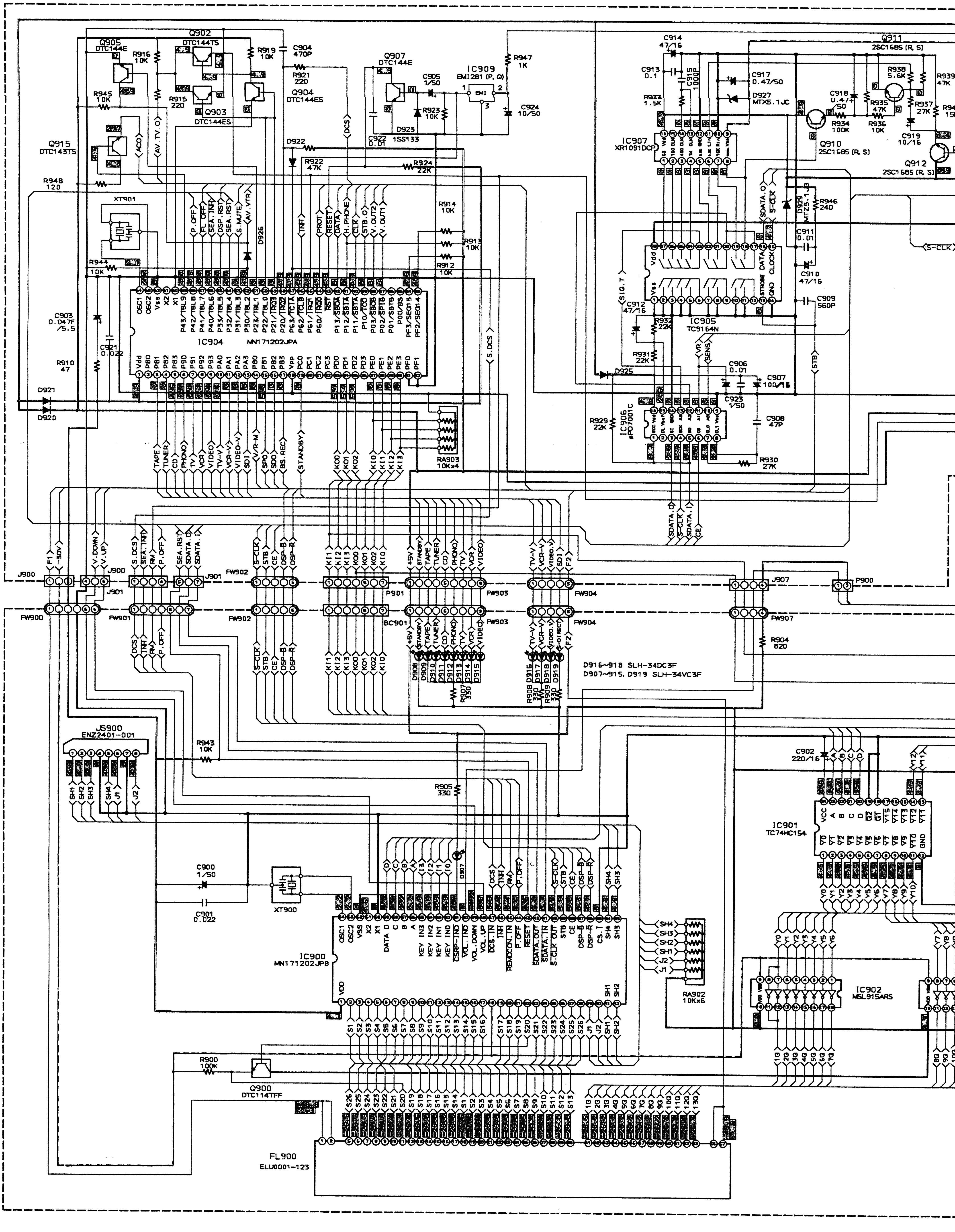
■ System & Fl Control P.C.Board (ENB-114)

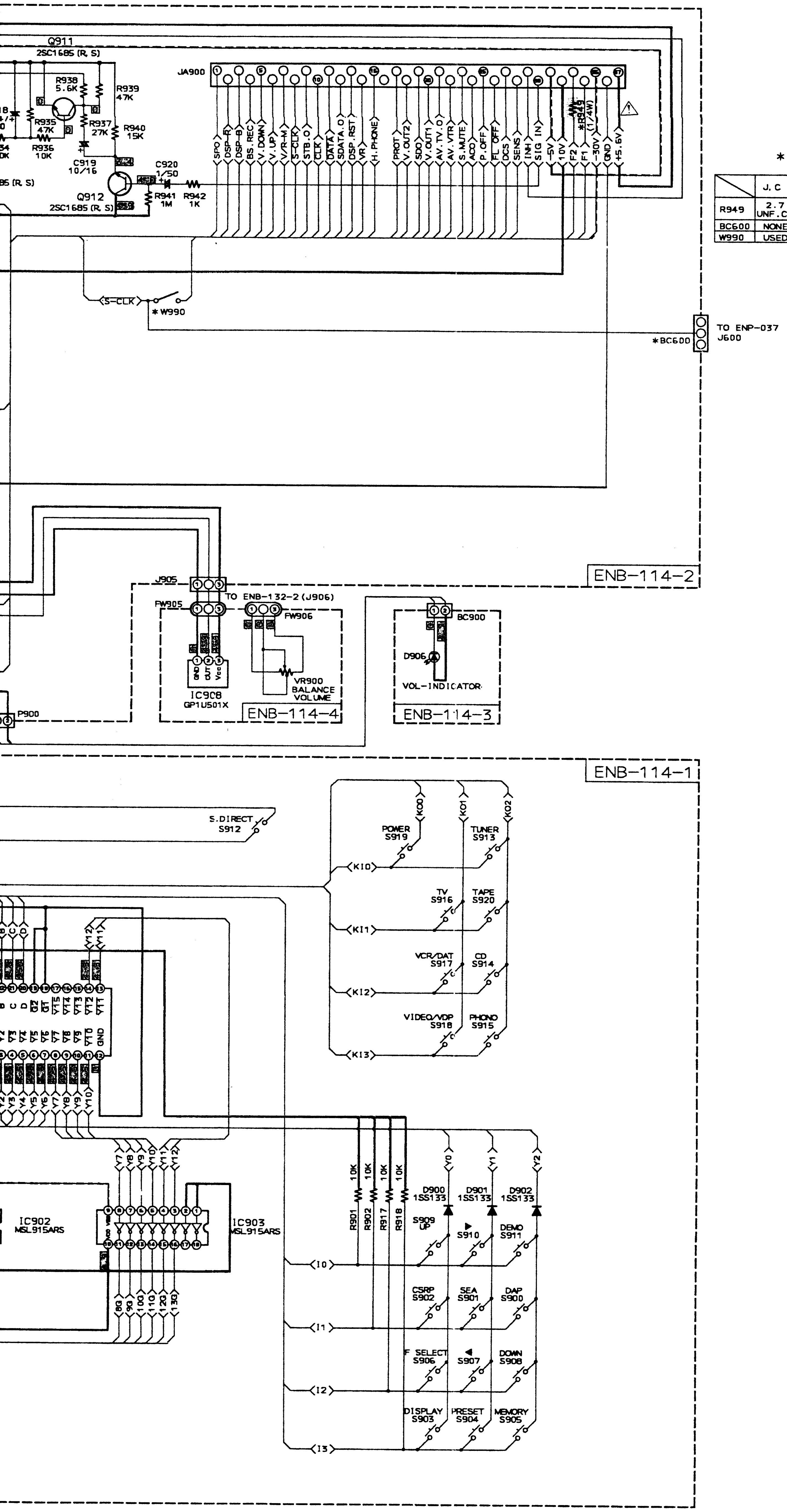

EMW10020
VR900
IC901
IC902
IC903
IC904
IC905
IC906
IC907
IC909
S900
S901
S902
S903
S904
S905
S906
S907
S908
S909
S910
S911
S912
S913
S915
S916
S917
S918
S919
S920
FW902
FW903
FW907
J905
D908
R906
R918
R948
R949

■ DAP P.C.Board (ENP-037)


EMW10124
IC650
IC659
IC654
P661
J600
L655

4. System Control & FL driver Section

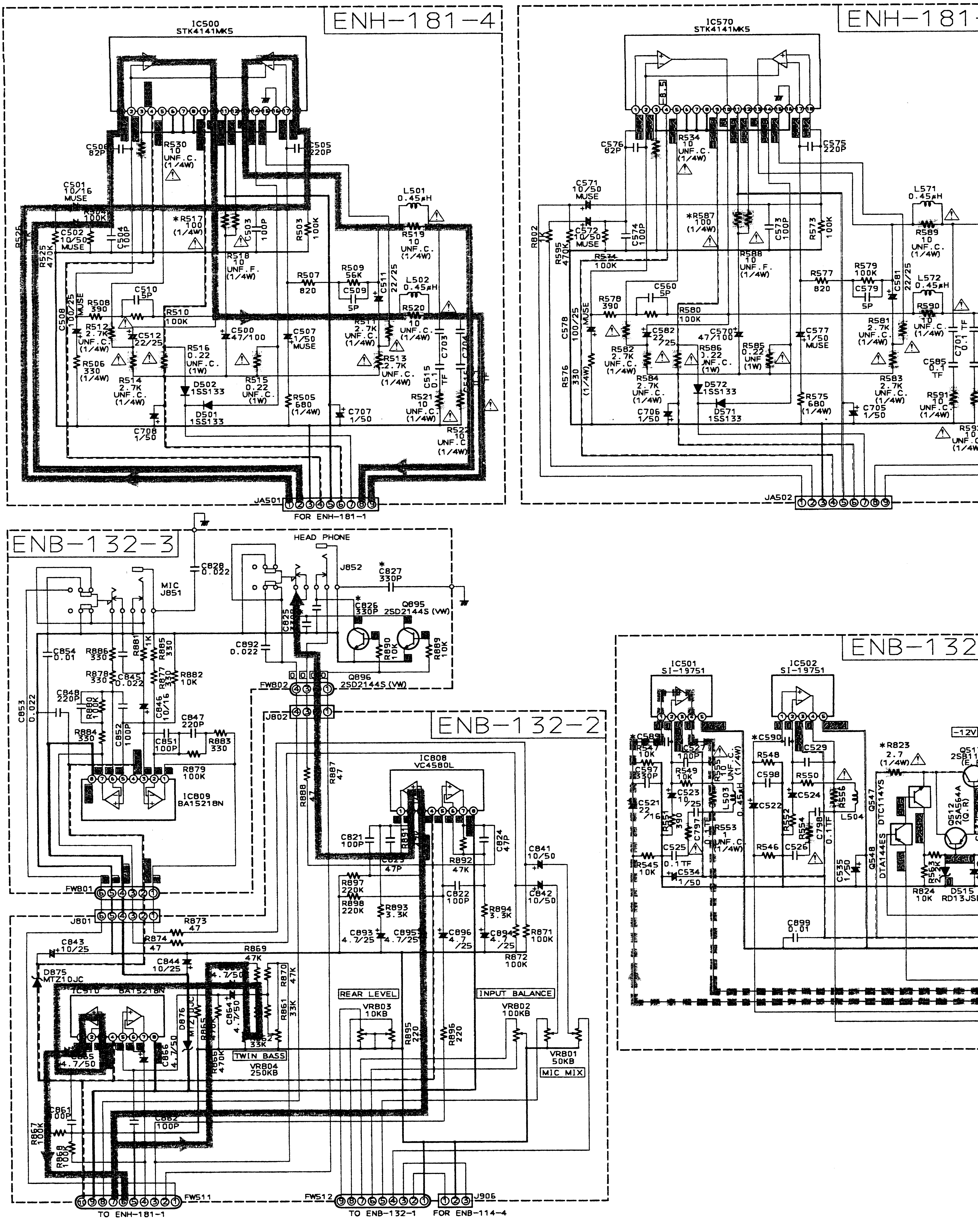

Q902 DTC144TS
Q905 DTC144E
R916 10K
R919 10K
C904 470P
R921 220
Q904 DTC144ES
R945 10K
R915 220
Q903 DTC144ES
Q907 DTC144E
C905 1/50
R923 10K
D923 1SS133
C922 0.01
IC909 EM1281 (P, Q)
R947 1K
C924 10/50
Q915 DTC143TS
R948 120
D922
R922 47K
R924 22K
XT901
R914 10K
R913 10K
R912 10K
R944 10K
C903 0.047F /5.5
C921 0.022
R910 47
IC904 MN171202JPA
D921
D920
D926
RA903 10Kx4
C914 47/16
C913 0.1
C915 1000P
R933 1.5K
C917 0.47/50
D927 MTZ5.1JC
C918 0.47/50
Q911 2SC1685 (R, S)
R938 5.6K
R939 47K
R935 47K
R937 27K
R934 100K
R936 10K
C919 10/16
Q910 2SC1685 (R, S)
Q912 2SC1685 (R, S)
IC907 XR1091DCP
D929 MTZ5.1JB
R946 240
C911 0.01
C910 47/16
C909 560P
C912 47/16
R932 22K
IC905 TC9164N
R931 22K
D925
C906 0.01
C907 100/16
C923 1/50
C908 47P
R929 22K
IC906 μPD7001C
R930 27K
J900
J901
FW902
P901
FW903
FW904
J907
P900
FW900
FW901
BC901
FW907
R904 820
D916~918 SLH-34DC3F
D907~915, D919 SLH-34VC3F
R907 330
R908 330
R909 330
JS900 ENZ2401-001
R943 10K
R905 330
C902 220/16
IC901 TC74HC154
C900 1/50
C901 0.022
XT900
IC900 MN171202JPB
RA902 10Kx6
IC902 MSL915ARS
R900 100K
Q900 DTC114TFF
FL900 ELU0001-123

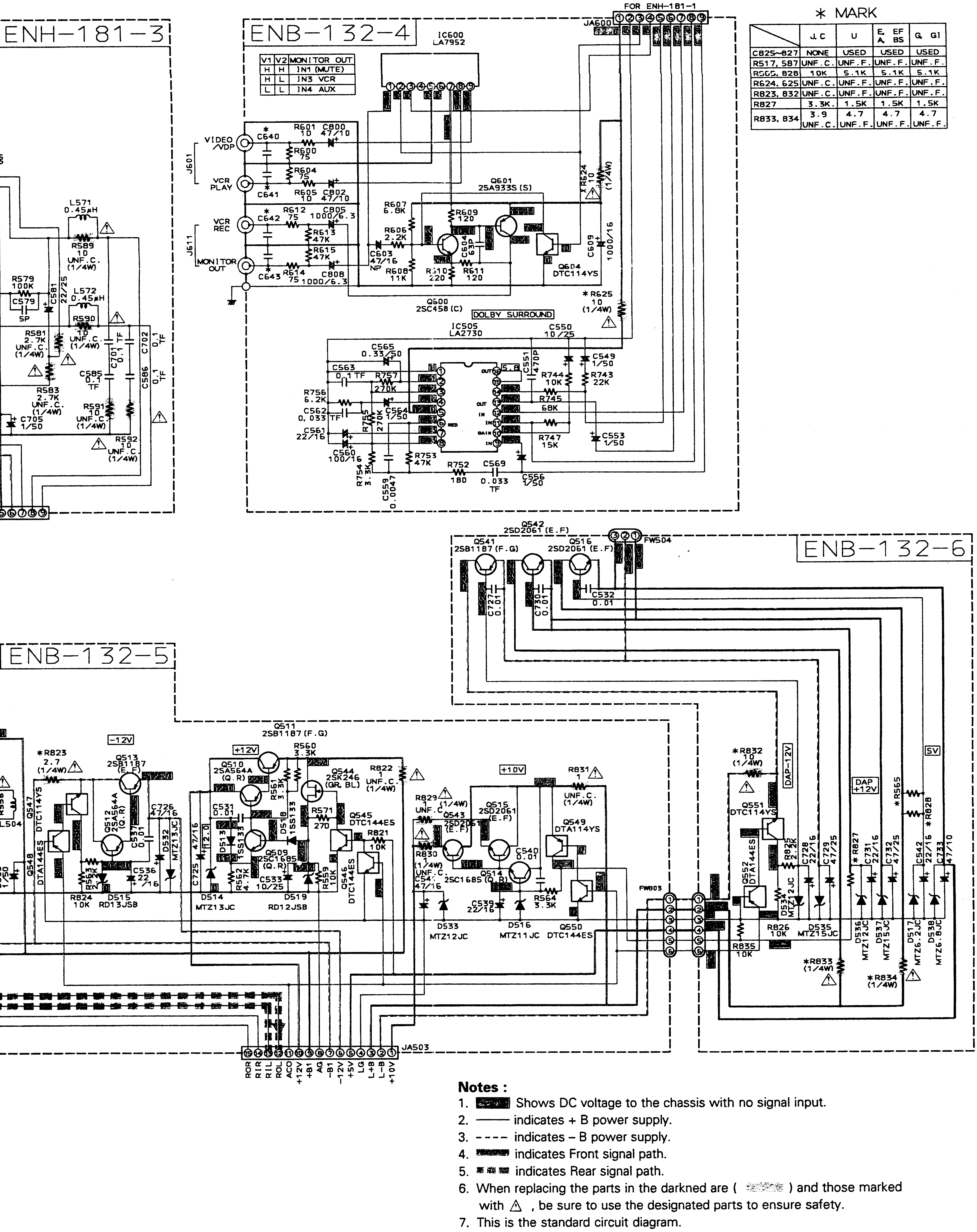

Q911
2SC1685 (R, S)
Q912
2SC1685 (R, S)
R938 5.6K
R939 47K
R935 47K
R936 10K
R937 27K
R940 15K
C919 10/16
C920 1/50
R941 1M
R942 1K
JA900
SPO
DSP-R
DSP-B
BS.REC
V.DOWN
V.UP
V/R-M
S-CLK
STB.O
CLK
DATA
SDATA.O
DSP.RST
VR
H.PHONE
PROT
V.OUT2
SDO
V.OUT1
AV.TV.O
AV.VTR
S.MUTE
ACO
P.OFF
FL OFF
DCS
SENS
INH
SIG IN
-5V
10V
F2
F1
-30V
GND
+5.6V
*R949
(1/4W)
S-CLK
*W990
*BC600
TO ENP-037
J600
J905
FW905
TO ENB-132-2 (J906)
FW906
IC908
GP1U501X
GND
OUT
Vcc
VR900
BALANCE
VOLUME
ENB-114-4
BC900
D906
VOL-INDICATOR
ENB-114-3
ENB-114-2
P900
ENB-114-1
S.DIRECT
S912
K00
K01
K02
POWER
S919
TUNER
S913
K10
TV
S916
TAPE
S920
K11
VCR/DAT
S917
CD
S914
K12
VIDEO/VDP
S918
PHONO
S915
K13
IC902
MSL915ARS
IC903
MSL915ARS
R901 10K
R902 10K
R917 10K
R918 10K
Y0
Y1
Y2
D900 1SS133
D901 1SS133
D902 1SS133
S909 UP
S910
DEMO
S911
I0
CSRP
S902
SEA
S901
DAP
S900
I1
F SELECT
S906
S907
DOWN
S908
I2
DISPLAY
S903
PRESET
S904
MEMORY
S905
I3
Y7
Y8
Y9
Y10
Y11
Y12
8G
9G
10G
11G
12G
13G

∗ MARK

	J. C	E, EF A, BS	G, GI	U
R949	2.7 UNF.C.	4.7 UNF.F.	4.7 UNF.F.	4.7 UNF.F.
BC600	NONE	USED	USED	USED
W990	USED	NONE	NONE	NONE

3. TWIN BASS & Power Amplifier Section


ENH-181-4
IC500
STK4141MKS
ENH-181-
IC570
STK4141MKS
JA501
FOR ENH-181-1
JA502
ENB-132-3
HEAD PHONE
J852
MIC
J851
Q895
2SD2144S (VW)
Q896
2SD2144S (VW)
FW802
J802
ENB-132-2
IC808
VC4580L
IC809
BA15218N
FW801
J801
IC810
BA15218N
TWIN BASS
VR804
250KB
REAR LEVEL
VR803
10KB
INPUT BALANCE
VR802
100KB
VR801
50KB
MIC MIX
FW511
TO ENH-181-1
FW512
TO ENB-132-1
J906
FOR ENB-114-4
ENB-132
IC501
SI-19751
IC502
SI-19751
-12V
Q547
DTC114YS
Q548
DTA144ES
Q512
2SA564A
(Q,R)
D515
RD13JS
R824
10K
C899
0.01


ENH-181-3
ENB-132-4
FOR ENH-181-1
JA600
IC600
LA7952
V1 V2 MONITOR OUT
H H IN1 (MUTE)
H L IN3 VCR
L L IN4 AUX
VIDEO /VDP
VCR PLAY
J601
VCR REC
MONITOR OUT
J611
Q601
2SA933S (S)
Q600
2SC458 (C)
Q604
DTC114YS
DOLBY SURROUND
IC505
LA2730
L571
0.45μH
L572
0.45μH
ENB-132-6
Q542
2SD2061 (E.F)
Q541
2SB1187 (F.G)
Q516
2SD2061 (E.F)
FW504
ENB-132-5
Q511
2SB1187 (F.G)
Q513
2SB1187 (E.F)
Q510
2SA564A (Q.R)
Q544
2SK246 (GR, BL)
Q509
2SC1685 (Q.R)
Q545
DTC144ES
Q546
DTC144ES
Q515
2SD2061 (E.F)
Q543
2SD2061 (E.F)
Q514
2SC1685 (Q.R)
Q549
DTA114YS
Q550
DTC144ES
Q551
DTC114YS
Q552
DTA144ES
Q547
DTC114YS
Q548
DTA144ES
-12V
+12V
+10V
DAP-12V
DAP +12V
5V
FW803
JA503
ROR
RIR
RIL
ROL
ACO
+12V
+B1
AG
-B1
-12V
+5V
LG
L+B
L-B
+10V

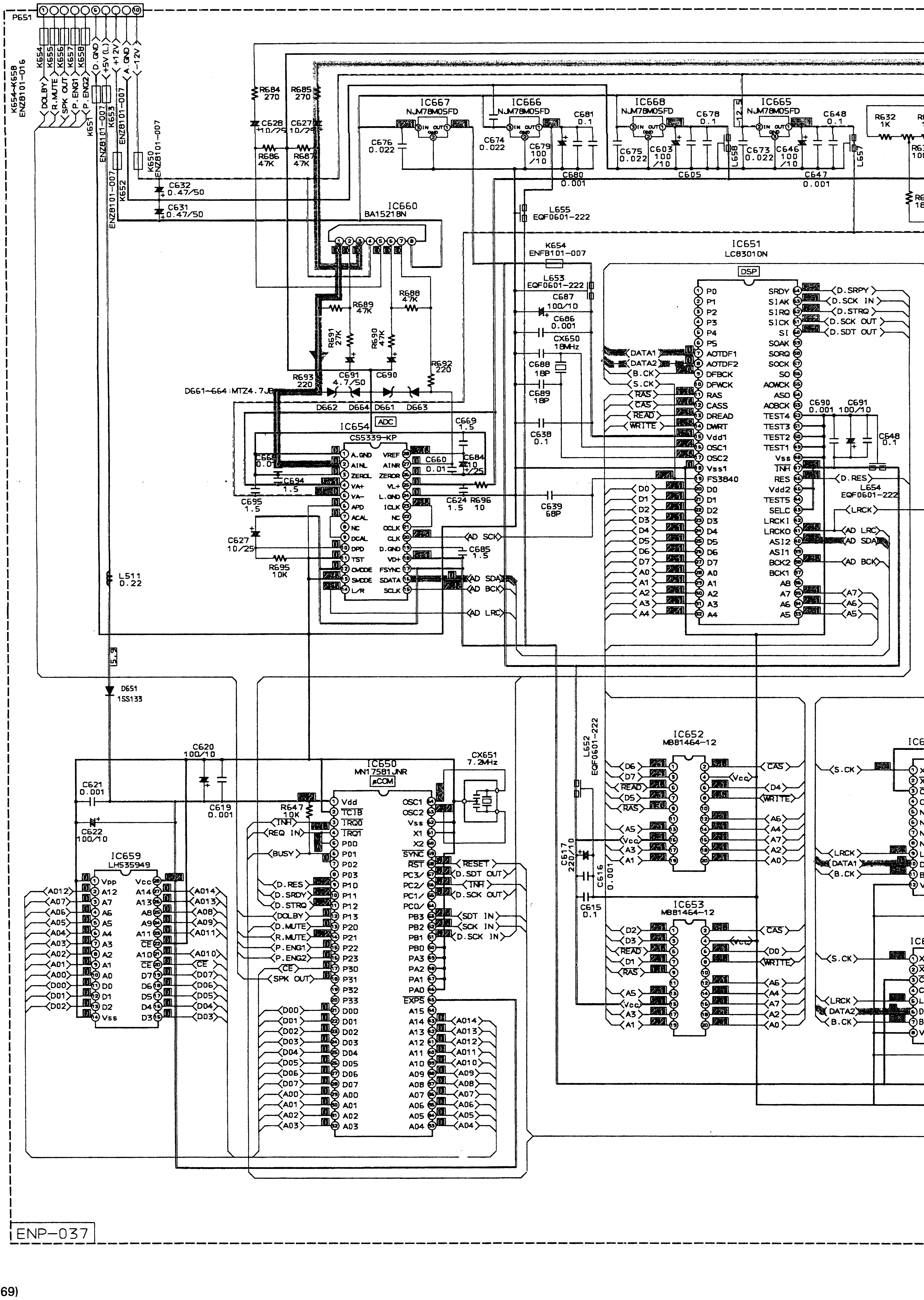
* MARK

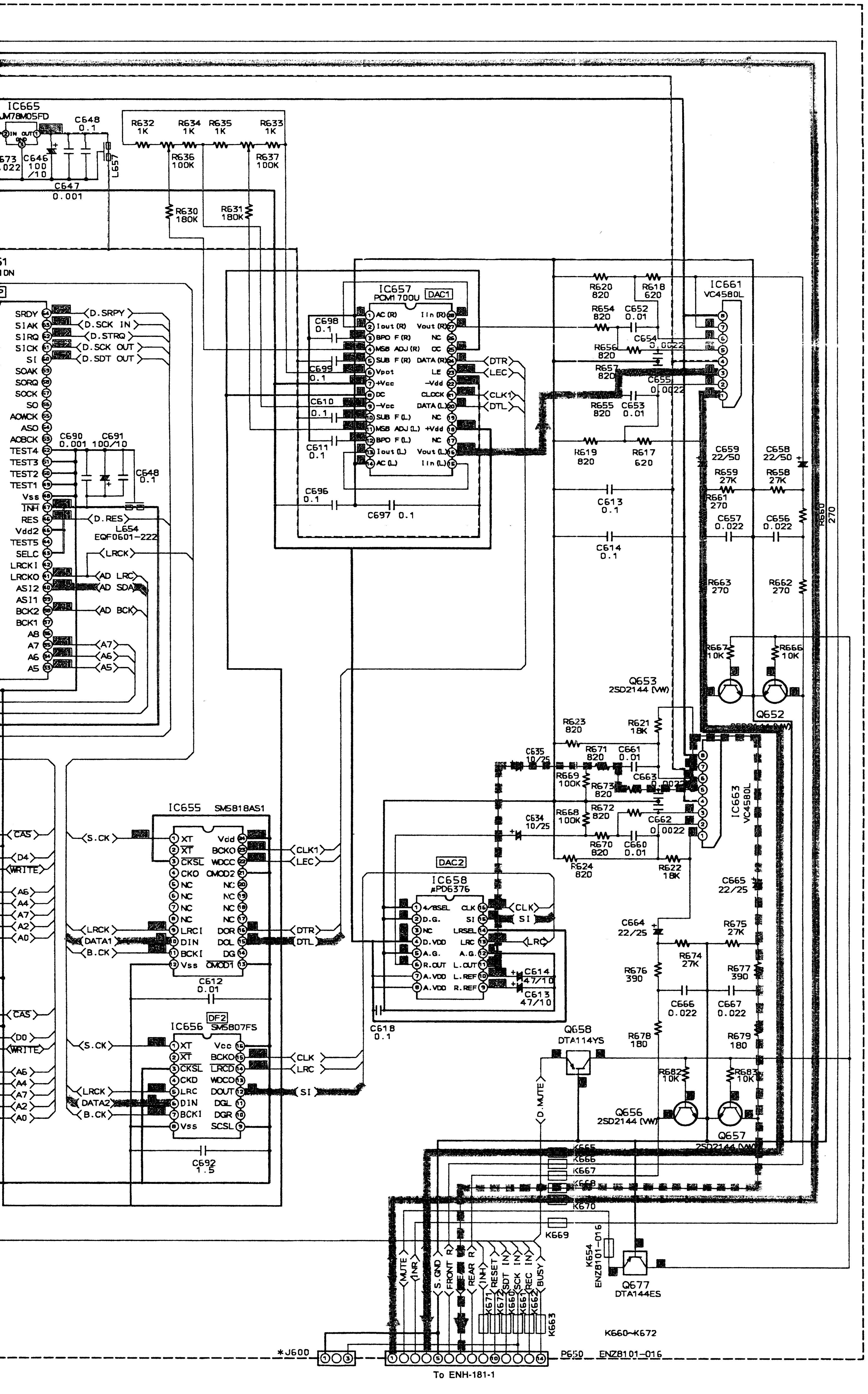
	J. C	U	E. EF A. BS	G. G1
C825~827	NONE	USED	USED	USED
R517, 587	UNF.C.	UNF.F.	UNF.F.	UNF.F.
R565, 828	10K	5.1K	5.1K	5.1K
R624, 625	UNF.C.	UNF.F.	UNF.F.	UNF.F.
R823, 832	UNF.C.	UNF.F.	UNF.F.	UNF.F.
R827	3.3K.	1.5K	1.5K	1.5K
R833, 834	3.9 UNF.C.	4.7 UNF.F.	4.7 UNF.F.	4.7 UNF.F.

Notes :

1. ■ Shows DC voltage to the chassis with no signal input.
2. —— indicates + B power supply.
3. ---- indicates – B power supply.
4. ▬ indicates Front signal path.
5. ▪▪▪ indicates Rear signal path.
6. When replacing the parts in the darkned are (░) and those marked with ⚠ , be sure to use the designated parts to ensure safety.
7. This is the standard circuit diagram.
   The design and contents are subject to change without notice.

2. DAP Section


P651
K654–K658
ENZ8101-016
K654 K655 K656 K657 K658
DOLBY
R.MUTE
SPK OUT
P.ENG1
P.ENG2
D.GND
+5V(L)
+12V
A.GND
−12V
K651
K653
ENZ8101-007
K652
ENZ8101-007
K650
ENZ8101-007
C632 0.47/50
C631 0.47/50
R684 270
R685 270
C628 10/25
C627 10/25
R686 47K
R687 47K
IC667 NJM78M05FD
IC666 NJM78M05FD
IC668 NJM78M05FD
IC665 NJM78M05FD
IN OUT GND
C676 0.022
C674 0.022
C679 100/10
C681 0.1
C680 0.001
C675 0.022
C603 100/10
C678 0.1
L658
C605
C673 0.022
C646 100/10
C648 0.1
C647 0.001
L657
R632 1K
L655 EQF0601-222
IC660 BA15218N
K654 ENFB101-007
L653 EQF0601-222
C687 100/10
C686 0.001
CX650 18MHz
C688 18P
C689 18P
C638 0.1
R689 47K
R688 47K
R691 27K
R690 47K
R692 220
R693 220
C691 4.7/50
C690
D661–664:MTZ4.7JB
D662 D664 D661 D663
IC654 ADC
CS5339-KP
C669 1.5
C668 0.01
C694 1.5
C695 1.5
C660 0.01
C684 10/25
C624 1.5
R696 10
C639 68P
C627 10/25
R695 10K
C685 1.5
A.GND AIN ZEROL VA+ VA− APD ACAL NC DCAL DPD TST CMODE SMODE L/R
VREF AINR ZEROR VL+ L.GND ICLK NC OCLK CLK D.GND VD+ FSYNC SDATA SCLK
AD SCK
AD SDA
AD BCK
AD LRC
L511 0.22
5.9
D651 1SS133
IC651 LC83010N DSP
P0 P1 P2 P3 P4 P5 AOTDF1 AOTDF2 DFBCK DFWCK RAS CASS DREAD DWRT Vdd1 OSC1 OSC2 Vss1 FS3840 D0 D1 D2 D3 D4 D5 D6 D7 A0 A1 A2 A3 A4
SRDY SIAK SIRQ SICK SI SOAK SORQ SOCK SO AOWCK ASO AOBCK TEST4 TEST3 TEST2 TEST1 Vss INH RES Vdd2 TEST5 SELC LRCKI LRCKO ASI2 ASI1 BCK2 BCK1 A8 A7 A6 A5
DATA1 DATA2 B.CK S.CK RAS CAS READ WRITE
D.SRPY D.SCK IN D.STRQ D.SCK OUT D.SDT OUT
C690 0.001
C691 100/10
C648 0.1
D.RES
L654 EQF0601-222
LRCK
AD LRC AD SDA AD BCK
IC652 MB81464-12
IC653 MB81464-12
CAS Vcc D4 WRITE D0
L652 EQF0601-222
C617 220/10
C616 0.001
C615 0.1
S.CK LRCK DATA1 DATA2 B.CK
C620 100/10
C621 0.001
C619 0.001
C622 100/10
IC650 MN17581JNR μCOM
CX651 7.2MHz
R647 10K
Vdd TC1B IRQ0 IRQ1 P00 P01 P02 P03 P10 P11 P12 P13 P20 P21 P22 P23 P30 P31 P32 P33 D00 D01 D02 D03 D04 D05 D06 D07 A00 A01 A02 A03
OSC1 OSC2 Vss X1 X2 SYNC RST PC3/ PC2/ PC1/ PC0/ PB3 PB2 PB1 PB0 PA3 PA2 PA1 PA0 EXPS A15 A14 A13 A12 A11 A10 A09 A08 A07 A06 A05 A04
INH REQ IN BUSY D.RES D.SRDY D.STRQ DOLBY D.MUTE R.MUTE P.ENG1 P.ENG2 CE SPK OUT
RESET D.SDT OUT INH D.SCK OUT SDT IN SCK IN D.SCK IN
IC659 LH535949
Vpp A12 A7 A6 A5 A4 A3 A2 A1 A0 D0 D1 D2 Vss
Vcc A14 A13 A8 A9 A11 CE A10 CE D7 D6 D5 D4 D3
ENP-037



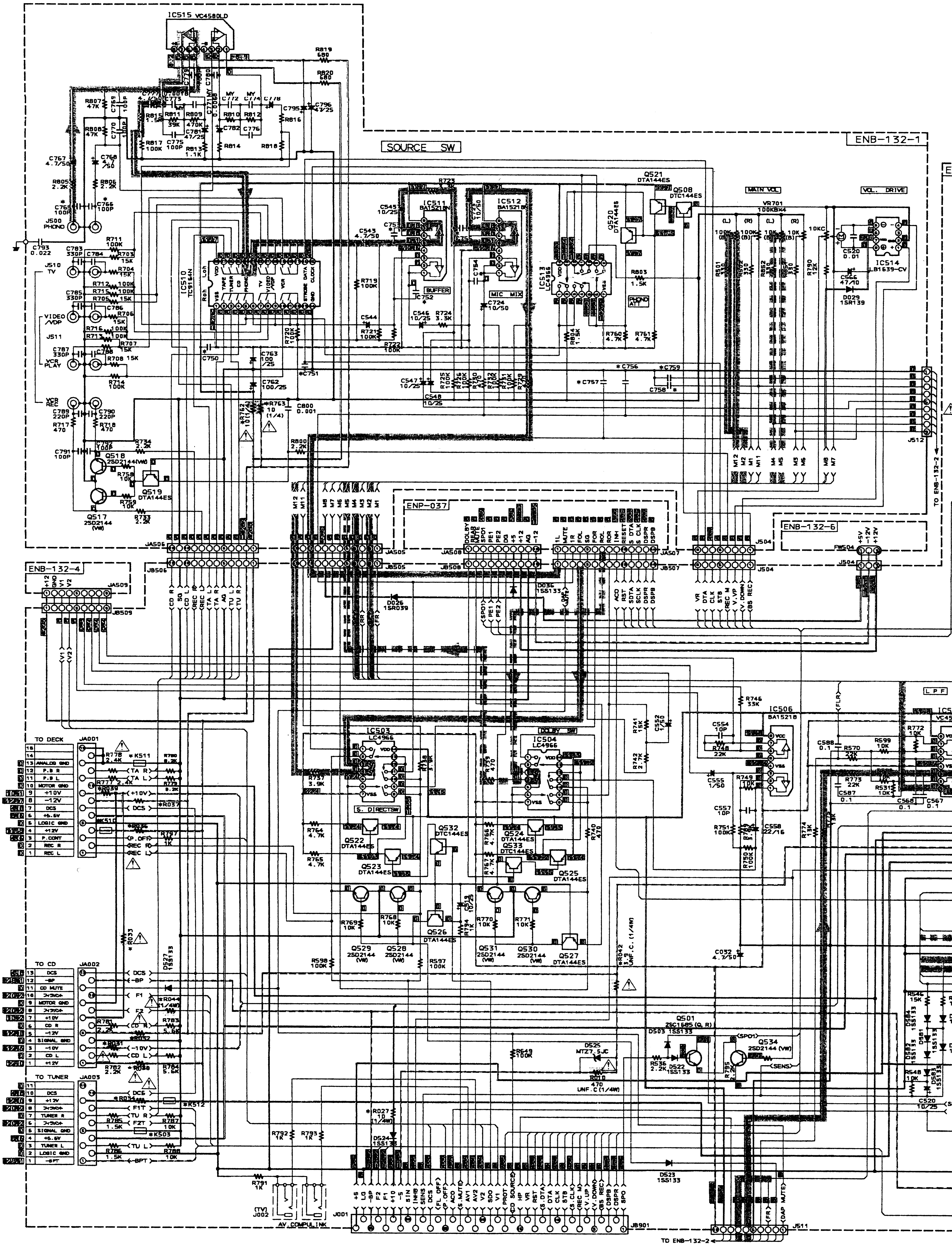
IC665
LM78M05FD
C648 0.1
C646 100/10
C647 0.001
L657
R632 1K
R634 1K
R635 1K
R633 1K
R636 100K
R637 100K
R630 180K
R631 180K
IC657
PCM1700U
DAC1
C698 0.1
C699 0.1
C610 0.1
C611 0.1
C696 0.1
C697 0.1
DTR
LEC
CLK1
DTL
R620 820
R618 620
R654 820
C652 0.01
R656 820
C654 0.0022
R657 820
C655 0.0022
R655 820
C653 0.01
R619 820
R617 620
IC661
VC4580L
C659 22/50
C658 22/50
R659 27K
R658 27K
R661 270
R660 270
C657 0.022
C656 0.022
C613 0.1
C614 0.1
R663 270
R662 270
R667 10K
R666 10K
Q653
2SD2144 (VW)
Q652
SRDY
SIAK
SIRQ
SICK
SI
SOAK
SORQ
SOCK
SO
AOWCK
ASO
AOBCK
TEST4
TEST3
TEST2
TEST1
Vss
INH
RES
Vdd2
TEST5
SELC
LRCKI
LRCKO
AS12
AS11
BCK2
BCK1
A8
A7
A6
A5
D.SRPY
D.SCK IN
D.STRQ
D.SCK OUT
D.SDT OUT
C690 0.001
C691 100/10
C648 0.1
L654
EQF0601-222
D.RES
LRCK
AD LRC
AD SDA
AD BCK
R623 820
R621 18K
R671 820
C661 0.01
C635 10/25
R669 100K
R673 820
C663 0.0022
R668 100K
R672 820
C662 0.0022
C634 10/25
R670 820
C660 0.01
R624 820
R622 18K
IC663
VC4580L
IC655 SM5818AS1
XT
XT
CKSL
CKO
NC
LRCI
DIN
BCKI
Vss
Vdd
BCKO
WDCC
CMOD2
DOR
DOL
DG
CMOD1
C612 0.01
S.CK
CAS
D4
WRITE
A6
A4
A7
A2
A0
DATA1
B.CK
IC658
μPD6376
DAC2
4/8SEL
D.G.
D.VDD
A.G.
R.OUT
A.VDD
CLK
SI
LRSEL
LRC
L.OUT
L.REF
R.REF
C614 47/10
C613 47/10
C618 0.1
C665 22/25
C664 22/25
R675 27K
R674 27K
R676 390
R677 390
C666 0.022
C667 0.022
R678 180
R679 180
Q658
DTA114YS
D.MUTE
R682 10K
R683 10K
Q656
2SD2144 (VW)
Q657
2SD2144 (VW)
DF2
IC656 SM5807FS
CKD
LRC
Vcc
LRCO
WDCO
DOUT
DGL
DGR
SCSL
D0
DATA2
C692 1.5
K665
K666
K667
K668
K670
K669
K654
ENZB101-016
Q677
DTA144ES
MUTE
INR
S.GND
FRONT R
REAR R
INH
RESET
SDT IN
SCK IN
REC IN
BUSY
K671
K672
K650
K661
K662
K663
K660~K672
*J600
P650
ENZB101-016
To ENH-181-1

*

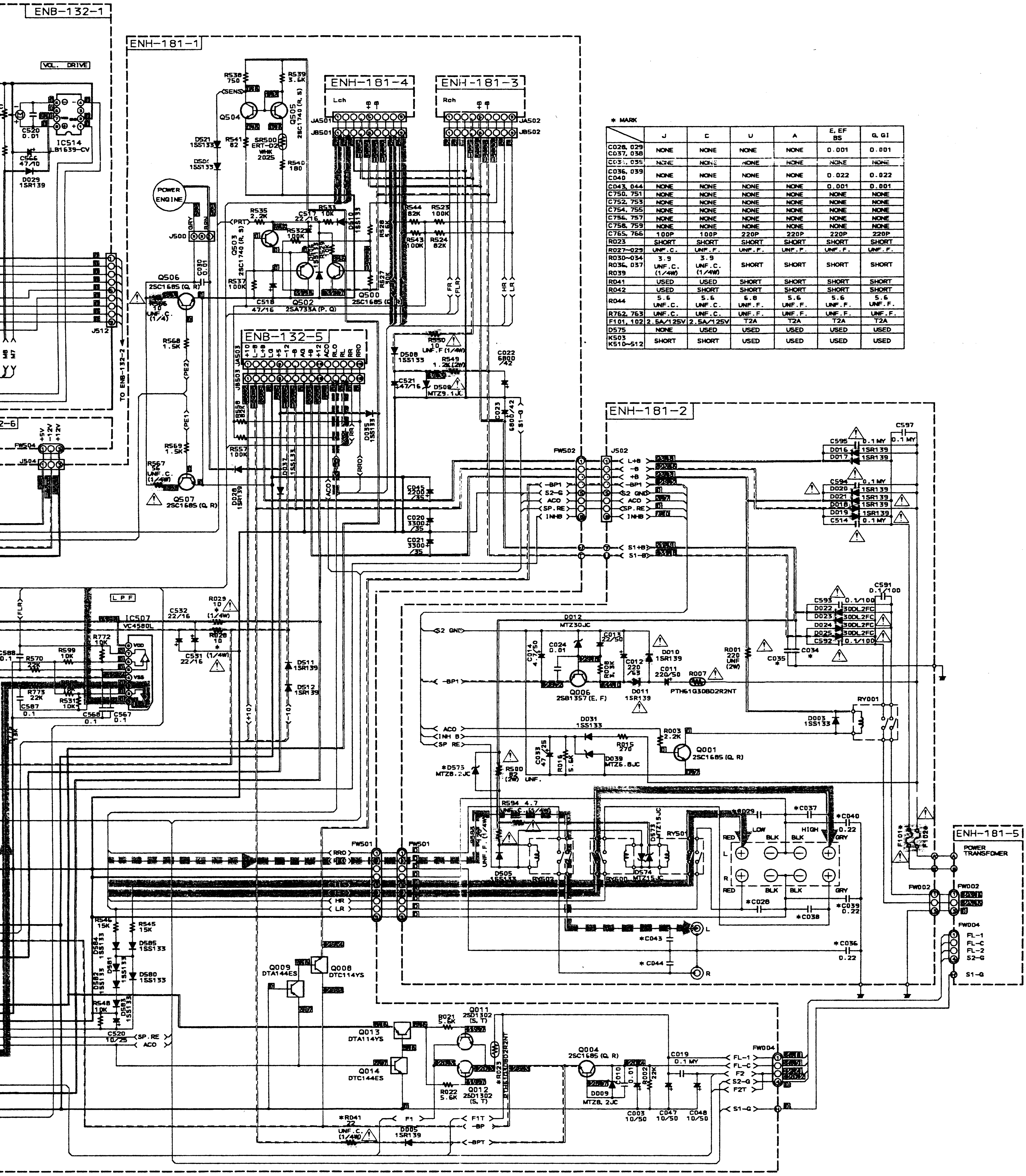
J600	J, C	E, EK A, BS	G, GI	U
	NONE	USED	USED	USED

Schematic Diagrams

1. Source Select & Speaker Terminal Section



IC515 VC4580LD
ENB-132-1
SOURCE SW
MAIN VOL
VOL. DRIVE
VR701 100KBX4
IC510 TC9164N
IC511 BA15218N
IC512 BA15218N
IC513 LC4966
IC514 LB1639-CV
BUFFER
MIC MIX
PHONO ATT
Q521 DTA144ES
Q508 DTC144ES
Q520 DTA144ES
J500 PHONO
J510 TV
VIDEO /VDP
J511
VCR PLAY
VCR REC
Q518 2SD2144(VW)
Q519 DTA144ES
Q517 2SD2144 (VW)
JA506
JB506
ENP-037
JA505
JB505
JA508
JB508
JA507
JB507
J504
ENB-132-6
FW504
ENB-132-4
JA509
JB509
J512
TO ENB-132-2
D026 1SR039
D036 1SS133
IC503 LC4966
IC504 LC4966
DOLBY SW
S. DIRECT SW
IC506 BA15218
LPF
Q522 DTA144ES
Q523 DTA144ES
Q532 DTC144ES
Q524 DTA144ES
Q533 DTC144ES
Q525 DTA144ES
Q529 2SD2144 (VW)
Q528 2SD2144 (VW)
Q526 DTA144ES
Q531 2SD2144 (VW)
Q530 2SD2144 (VW)
Q527 DTA144ES
TO DECK
JA001
TO CD
JA002
TO TUNER
JA003
Q501 2SC1685 (Q, R)
D503 1SS133
D522 1SS133
Q534 2SD2144 (VW)
D525 MTZ7.5JC
R010 470 UNF.C (1/4W)
R042 UNF.C. (1/4W)
D524 1SS133
D523 1SS133
D029 1SR139
(TV) J002
AV.COMPULINK
J001
JB901
J511
TO ENB-132-2


ENB-132-1
VOL. DRIVE
IC514 LB1639-CV
ENH-181-1
ENH-181-4
Lch
ENH-181-3
Rch
POWER ENGINE
Q504
Q505 2SC1740 (R, S)
SR500 ERT-D2 WHK 202S
Q503 2SC1740 (R, S)
Q502 2SA733A (P, Q)
Q500 2SC1685 (Q, R)
Q506 2SC1685 (Q, R)
Q507 2SC1685 (Q, R)
TO ENB-132-2
ENB-132-5
LPF
IC507 VC4580L
ENH-181-2
Q006 2SB1357 (E, F)
Q001 2SC1685 (Q, R)
RY001
RY502
RY500
RY501
PTH61G30BD2R2NT
ENH-181-5
POWER TRANSFOMER
FW002
FW004
FL-1
FL-C
FL-2
S2-G
S1-G
Q009 DTA144ES
Q008 DTC114YS
Q013 DTA114YS
Q014 DTC144ES
Q011 2SD1302 (S, T)
Q012 2SD1302 (S, T)
Q004 2SC1685 (Q, R)
D009 MTZ8.2JC
RED
LOW
BLK
HIGH
GRY
L
R

* MARK

	J	C	U	A	E, EF BS	G, GI
C028, 029 C037, 038	NONE	NONE	NONE	NONE	0.001	0.001
C034, 035	NONE	NONE	NONE	NONE	NONE	NONE
C036, 039 C040	NONE	NONE	NONE	NONE	0.022	0.022
C043, 044	NONE	NONE	NONE	NONE	0.001	0.001
C750, 751	NONE	NONE	NONE	NONE	NONE	NONE
C752, 753	NONE	NONE	NONE	NONE	NONE	NONE
C754, 755	NONE	NONE	NONE	NONE	NONE	NONE
C756, 757	NONE	NONE	NONE	NONE	NONE	NONE
C758, 759	NONE	NONE	NONE	NONE	NONE	NONE
C765, 766	100P	100P	220P	220P	220P	220P
R023	SHORT	SHORT	SHORT	SHORT	SHORT	SHORT
R027~029	UNF.C.	UNF.F.	UNF.F.	UNF.F.	UNF.F.	UNF.F.
R030~034 R036, 037 R039	3.9 UNF.C. (1/4W)	3.9 UNF.C. (1/4W)	SHORT	SHORT	SHORT	SHORT
R041	USED	USED	SHORT	SHORT	SHORT	SHORT
R042	USED	SHORT	SHORT	SHORT	SHORT	SHORT
R044	5.6 UNF.C.	5.6 UNF.C.	6.8 UNF.F.	5.6 UNF.F.	5.6 UNF.F.	5.6 UNF.F.
R762, 763	UNF.C.	UNF.C.	UNF.F.	UNF.F.	UNF.F.	UNF.F.
F101, 102	2.5A/125V	2.5A/125V	T2A	T2A	T2A	T2A
D575	NONE	USED	USED	USED	USED	USED
K503 K510~512	SHORT	SHORT	USED	USED	USED	USED

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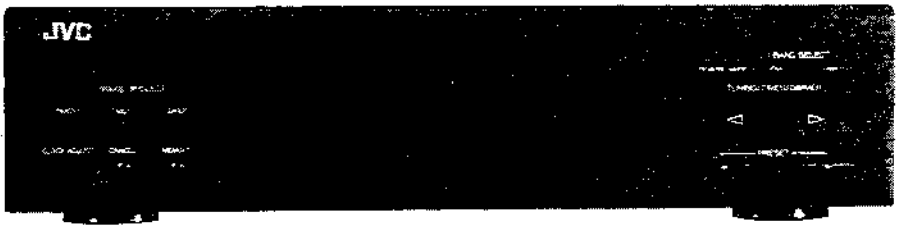
JVC

SERVICE MANUAL

COMPACT COMPONENT SYSTEM

MODEL NO. **DX-MX90BK/CA-MX90BK**
(UNIT NO. FX-MX90BK)



- * For instruction manual, please refer to the CA-MX90BK (S.M.NO.20267) or DX-MX90BK (S.M.NO.20268).
- * AX-MX90BK is needed (for power supply etc.) when servicing.

Contents

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FM / AM Tuner Alignment Procedures 1-10
ClockGenerator Frequency Adjustment 1-11
Schematic Diagrams .... Insertion
Block Diagram .... Insertion
Printed Circuit Board .... Insertion
Parts List .... Insertion

No. 20271
June 1991

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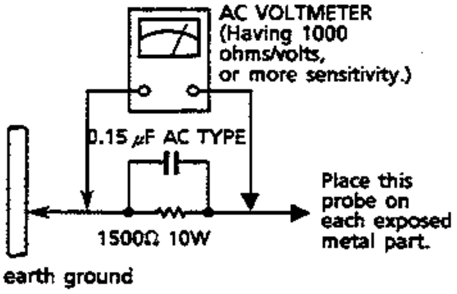
Safety Precautions

1. The design of this product contains special hardware and many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Services should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the product should not be made. Any design alterations of the product should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacture of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the Parts List of Service Manual. Electrical components having such features are identified by shading on the schematics and by (⚠) on the Parts List in the Service Manual. The use of a substitute repalcement which does not have the same safety characteristics as the recommended replacement parts shown in the Parts List of Service Manual may create shock, fire, or other hazards.
4. The leads in the products are routed and dressed with ties, clamps, tubings, barriers and the like to be separated from live parts, high temperature parts, moving parts and/or sharp edges for the prevention of electric shock and fire hazard. When service is required, the original lead routing and dress should be observed, and it should be confirmed that they have been returned to normal, after re-assembling.
5. Leakage currnet check (Electrical shock hazard testing)
   After re-assembling the product, always perform an isolation check on the exposed metal parts of the product (antenna terminals, knobs, metal cabinet, screw heads, headphone jack, contorl shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.
   Do not use a line isolation transformer during this check.
   - Plug the AC line cord directly into the AC outlet. Using a "Leakage Current Tester", measure the leakage current from each exposed metal parts of the cabinet, particularily any exposed metal part having a return path to the chassis, to a known good earth ground. Any leakage current must not exceed 0.5mA AC (r.m.s.).
   - Alternate check method
     Plug the AC line cord directly into the AC outlet. Use an AC voltmeter having, 1,000 ohms per volt or more sensitivity in the following manner. Connect a 1,500Ω 10 W resistor paralleled by a 0.15 μF AC-type capacitor between an exposed metal part and a known good earth ground.
     Measure the AC voltage across the resistor with the AC voltmeter.
     Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and meausre the AC voltage across the resistor.
     Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75 V AC (r.m.s.). This corresponds to 0.5 mA AC (r.m.s.).



Warning

1. This equipment has been designed and manufactured to meet international safety standards.
2. It is the legal responsibility of the repairer to ensure that these safety standards are maintained.
3. Repairs must be made in accordance with the relevant safety standards.
4. It is essential that safety critical components are replaced by approved parts.
5. If mains voltage selector is provided, check setting for local voltage.

Specifications

FM TUNER SECTION

Tuning range	: 87.5 MHz — 108.0 MHz
Usable sensitivity	: 0.95μV / 75 ohms(10.8 dBf)
Signal-to-noise ratio (IHF-A Weighted / DIN)	: MONO (at 85dBf) 80 dB / 72dB STEREO (at 85dBf) 73 dB / 64dB

AM TUNER SECTION

MW

Tuning range

Area	Channel space	
	9kHz	10kHz
U.S.A. Canada	—	530kHz~1710kHz
Continental Europe, U.K.	522kHz~1629kHz	—
Italy	522kHz~1629kHz	—
Australia	522kHz~1629kHz	—
Other Area	531kHz~1602kHz	530kHz~1600kHz

LW

Tuning range

Area	Channel Space (1kHz)
U.S.A. Canada	—
Continental Europe, U.K.	144kHz~353kHz
Italy	144kHz~290kHz
Australia	—
Other Area	—

GENERAL

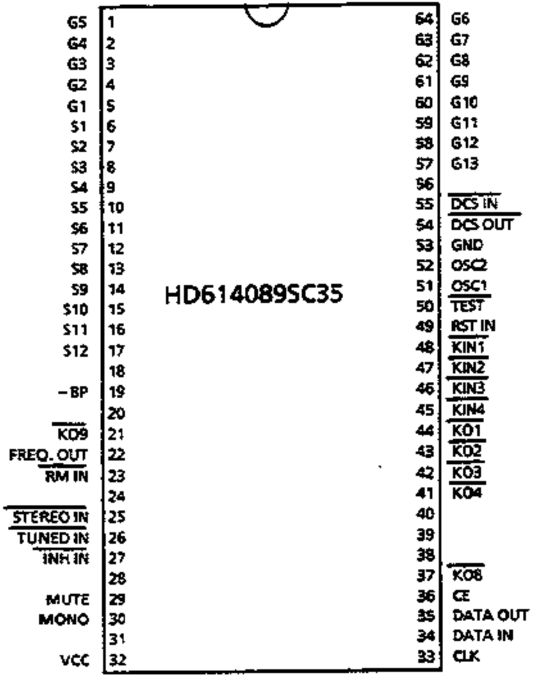
Dimensions (W × H × D)	: 10-7/8" × 2-11/16" × 10-7/8" inches (275 × 68 × 275 mm)
Weight	: 3.6 lbs. (1.6 kg)

Design and specifications subject to change without notice.

Description of Major LSIs

■ H614089SC35(IC201) : System Controller

1. Terminal Layout


HD614089SC35
G5 1
G4 2
G3 3
G2 4
G1 5
S1 6
S2 7
S3 8
S4 9
S5 10
S6 11
S7 12
S8 13
S9 14
S10 15
S11 16
S12 17
18
-BP 19
20
KO9 21
FREQ. OUT 22
RM IN 23
24
STEREO IN 25
TUNED IN 26
INH IN 27
28
MUTE 29
MONO 30
31
VCC 32
64 G6
63 G7
62 G8
61 G9
60 G10
59 G11
58 G12
57 G13
56
55 DCS IN
54 DCS OUT
53 GND
52 OSC2
51 OSC1
50 TEST
49 RST IN
48 KIN1
47 KIN2
46 KIN3
45 KIN4
44 KO1
43 KO2
42 KO3
41 KO4
40
39
38
37 KO8
36 CE
35 DATA OUT
34 DATA IN
33 CLK

2. Key Matrix

	KEY OUT 1 (pin44)	KEY OUT2 (pin43)	KEY OUT3 (pin42)	KEY OUT4 (pin41)
KEY IN 1 (pin48)	TP203 (POWER)	WAKE-UP /SLEEP	UP	FM
KEY IN 2 (pin47)	TIMER1	CLOCK ADJ	DOWN	AM
KEY IN 3 (pin46)	TIMER2	CANCEL	PRESET UP	FM MODE/MUTE
KEY IN 4 (pin45)	DAILY	MEMORY	PRESET DOWN	—

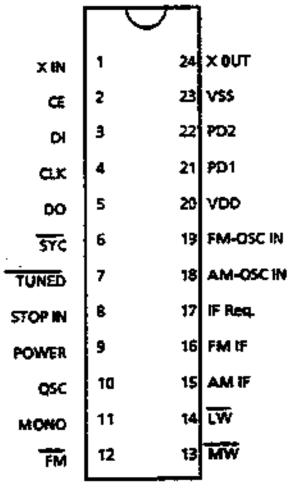
3. Pin Functions

Pin NO.	symbol	I/O	Function and Operations	Pin NO.	symbol	I/O	Function and Operations
1	G5	O	FL grid control output	33	CLK	O	Clock output for data transmit
2	G4	O	〃	34	DAATA IN	I	Data input
3	G3	O	〃	35	DATA OUT	O	Data output
4	G2	O	〃	36	CE	O	Chip enable
5	G1	O	〃	37	KO8	O	Version setting signal
6	S1	O	FL segment control output	38	—	—	Non connection
7	S2	O	〃	39	—	—	〃
8	S3	O	〃	40	—	—	〃
9	S4	O	〃	41	KO4	O	Key matrix output
10	S5	O	〃	42	KO3	O	〃
11	S6	O	〃	43	KO2	O	〃
12	S7	O	〃	44	KO1	O	〃
13	S8	O	〃	45	KIN4	I	Key matrix input
14	S9	O	〃	46	KIN3	I	〃
15	S10	O	〃	47	KIN2	I	〃
16	S11	O	〃	48	KIN1	I	〃
17	S12	O	〃	49	RST IN	I	Reset signal input
18	—	—	Non connection	50	TEST	—	TEST terminal
19	-BP	I	Power supply for FL Display	51	OSC1	I	Clock oscillation input
20	—	—	Non connection	52	OSC2	O	Clock oscillation output
21	KO9	O	Key matrix output	53	GND	—	Ground
22	FREQ. OUT	O	Clock frequency output	54	DCS OUT	O	Compulink signal output
23	RM IN	I	Remote control signal input	55	DCS IN	I	Compulink signal input
24	—	—	Non connection	56	—	—	Non connection
25	STEREO IN	I	Input for indication of "STEREO"	57	G13	O	FL grid control output
26	TUNED IN	I	Input for indication of "TUNED"	58	G12	O	〃
27	INH IN	I	Inhibit signal input	59	G11	O	〃
28	—	—	Non connection	60	G10	O	〃
29	MUTE	O	Muting signal output	61	G9	O	〃
30	MONO	—	Non connection	62	G8	O	〃
31	—	—	〃	63	G7	O	〃
32	VCC	I	Power supply	64	G6	O	〃

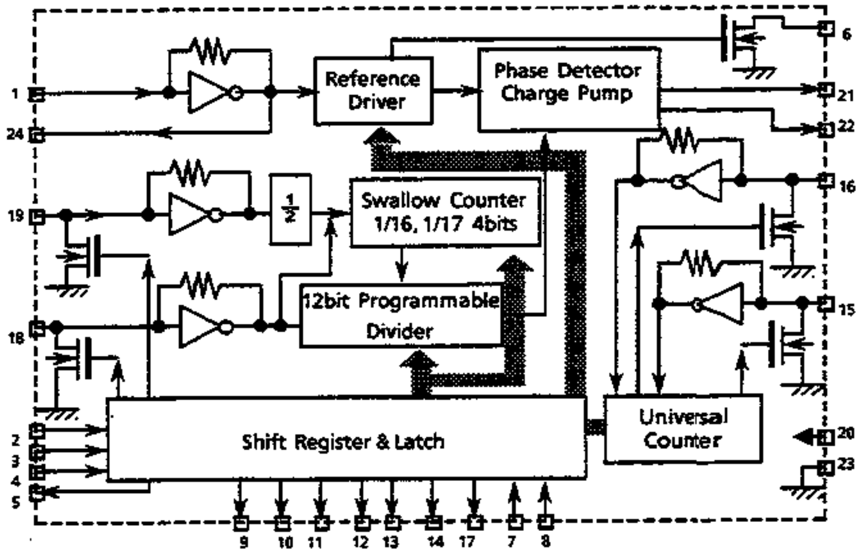
■ LC7218 (IC102) : PLL Synthesizer

1. The main function descriptions
   (1) It makes the local oscillation frequency by the control data from IC201.
   (2) Decode the control signal and transmit the signal for receiving conditions.
   (3) For the best tuning, count the internal-frequency and transmit the data to IC201.

2. Terminal Layout


X IN 1
CE 2
DI 3
CLK 4
DO 5
$\overline{\text{SYC}}$ 6
$\overline{\text{TUNED}}$ 7
STOP IN 8
POWER 9
QSC 10
MONO 11
$\overline{\text{FM}}$ 12
24 X OUT
23 VSS
22 PD2
21 PD1
20 VDD
19 FM-OSC IN
18 AM-OSC IN
17 IF Req.
16 FM IF
15 AM IF
14 $\overline{\text{LW}}$
13 $\overline{\text{MW}}$

3. Block Diagram


Reference Driver
Phase Detector Charge Pump
Swallow Counter 1/16, 1/17 4bits
1/2
12bit Programmable Divider
Shift Register & Latch
Universal Counter
1
24
19
18
2
3
4
5
6
21
22
16
15
20
23
9
10
11
12
13
14
17
7
8

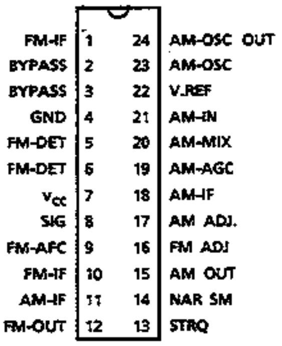
4. Pin Functions

Pin No.	Symbol	I/O	Functions and Operations
1,24	X in , X out	I/O	Crystal oscillator (7.2MHz).
2	CE	I	Fix the chip enable to "H" when inputting (DI) and outputting (DO) the serial data.
3	DI	I	Receive the control data from the controller (IC201).
4	CLK	I	This clock is used to synchronize data when transmitting the data of DI and DO.
5	DO	O	Transmit the data from LC7218 to the controller which is synchronized with CL.
6	SYC	–	Not used.
7	TUNED	I	Receive the tuned signal from IC104 (LA1266A).
8	STOP IN	I	Not used.
9	POWER	O	Not used.
10	QSC	O	ON mode with " H " and OFF mode with " L ". (NOT USED)
11	MONO	O	It is "H" on FM-monaural, "L" on FM-Stereo.
12	FM	O	It is "H" on FM mode.
13	MW	O	It is "H" on MW mode.
14	LW	O	It is "H" on LW mode.
15	AM-IF	I	Universal counter input for AM-IF from IC104 (LA1266A).
16	FM-IF	I	Universal counter input for FM-IF from IC104(LA1266A).
17	IF Req.	O	Output the "IF-signal request" to IC104 when the pin-7 (TUNED) go to "H".
18	AM OSC IN	I	Input the local oscillator signal of AM.
19	FM OSC IN	I	Input the local oscillator signal of FM.
20	VDD	–	This is a terminal of power supply.
21	PD1	O	PLL charge pump output : When the local oscillator signal frequency is higher than the reference frequency high level signals will output. When it is lower than the reference frequency, low level signals will output. When it is same as reference frequency signals, it will be floating.
22	PD2	O	Not used.
23	VSS	–	Power supply.

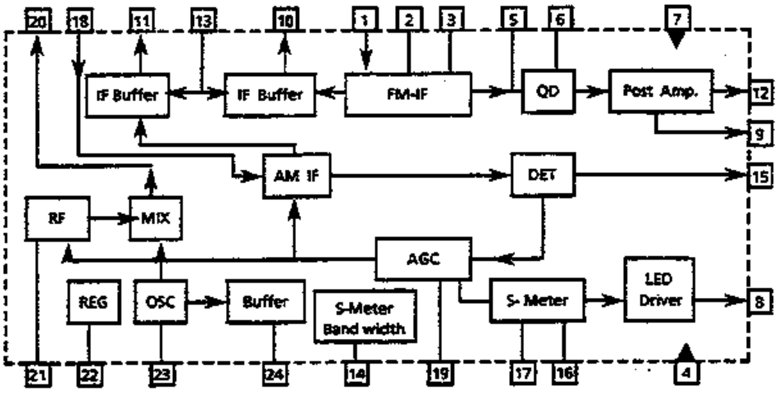
■ LA1266A (IC104) : FM AM IF AMP & detector

1. The main function descriptions
   (1) Amplify and detect of FM IF frequencies.
   (2) It has local oscillator and mixer for AM, and amplify the AM-IF signal.

2. Terminal Layout


FM-IF 1
BYPASS 2
BYPASS 3
GND 4
FM-DET 5
FM-DET 6
Vcc 7
SIG 8
FM-AFC 9
FM-IF 10
AM-IF 11
FM-OUT 12
24 AM-OSC OUT
23 AM-OSC
22 V.REF
21 AM-IN
20 AM-MIX
19 AM-AGC
18 AM-IF
17 AM ADJ.
16 FM ADJ
15 AM OUT
14 NAR SM
13 STRQ

3. Block Diagram


20
18
11
13
10
1
2
3
5
6
7
IF Buffer
IF Buffer
FM-IF
QD
Post Amp.
12
9
AM IF
DET
15
RF
MIX
AGC
REG
OSC
Buffer
S-Meter Band width
S- Meter
LED Driver
8
21
22
23
24
14
19
17
16
4

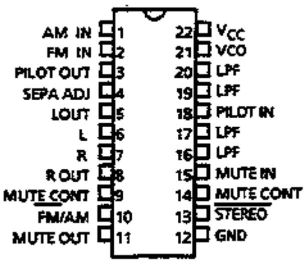
4. Pin Functions

Pin No.	Symbol	I/O	Functions and Operations
1	FM IF	I	This is an input terminal of FM IF Signal.
2,3	BYPASS	–	Bypass of FM IF Amp.
4	GND	–	This is the device ground terminal.
5,6	FM DET	–	FM detect transformer.
7	V_{CC}	–	This is the power supply terminal.
8	TUNED	O	When the set is tunning ,this terminal become "L".
9	FM AFC	O	This is an output terminal of voltage for FM - AFC.
10	FM IF OUT	O	When the signal of IF REQ of IC102(LC7218) applied to pin17, the signal of FM IF does output.
11	AM IF OUT	O	When the signal of IF REQ of IC102(LC7218) applied to pin17, the signal of AM IF does output.
12	FM OUT	O	FM detection output.
13	STRQ	I	The IF-signals come out from pin10 (FM-IF) or pin11 (AM-IF) while this terminal going to "High".
14	NAR SM	–	Control the Band-width of signal meter.
15	AM OUT	O	AM detection output.
16	FM ADJ	–	For adjust the stop level (or mute level) of FM.
17	AM ADJ	–	For adjust the stop level (or mute level) of AM.
18	AM-IF	I	Input of AM IF Signal.
19	AM-AGC	I	This is an AGC voltage Input terminal for AM.
20	AM-MIX	O	This is an output terminal for AM mixer.
21	AM-IN	I	This is an input terminal for AM RF Signal.
22	V.REF	–	Register value between pin9 and pin22 desides the frequency width of the input signal.
23	AM-OSC	–	This is a terminal of AM Local oscillation circuit.
24	AM-OSC OUT	O	AM Local Oscillation Signal output.

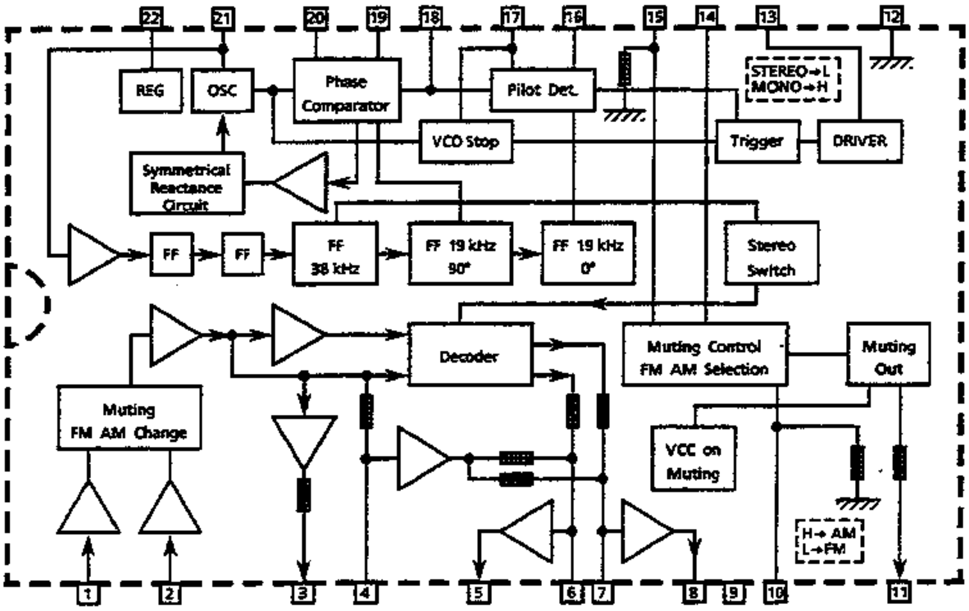
■ LA3401 (IC105) : FM MPX Decorder

1. The main function descriptions
   (1) Decord the FM Multiplex Signal (Stereo signal).
   (2) When receiving FM Stereo Signal, it outputs the signal for indicator.
   (3) AM / FM Audio Amplifier.

2. Terminal Layout


AM IN 1
FM IN 2
PILOT OUT 3
SEPA ADJ 4
LOUT 5
L 6
R 7
R OUT 8
MUTE CONT 9
FM/AM 10
MUTE OUT 11
22 Vcc
21 VCO
20 LPF
19 LPF
18 PILOT IN
17 LPF
16 LPF
15 MUTE IN
14 MUTE CONT
13 STEREO
12 GND

3. Block Diagram


22
21
20
19
18
17
16
15
14
13
12
REG
OSC
Phase Comparator
Pilot Det.
STEREO→L
MONO→H
VCO Stop
Trigger
DRIVER
Symmetrical Reactance Circuit
FF
FF
FF 38 kHz
FF 19 kHz 90°
FF 19 kHz 0°
Stereo Switch
Decoder
Muting Control FM AM Selection
Muting Out
Muting FM AM Change
VCC on Muting
H→AM
L→FM
1
2
3
4
5
6
7
8
9
10
11

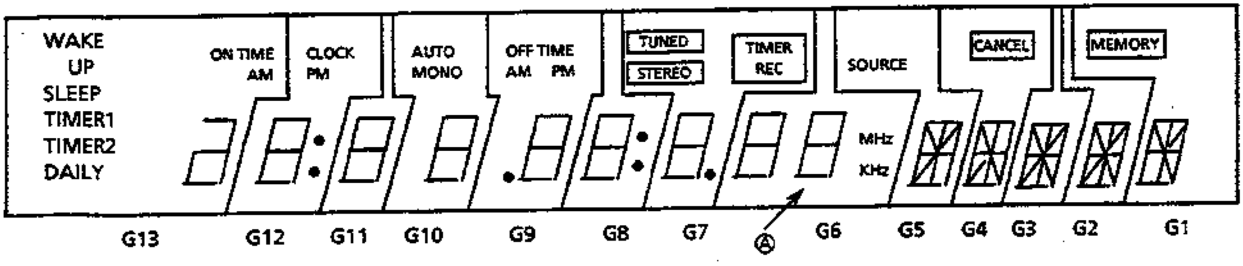
4. Pin Functions

Pin No.	Symbol	I/O	Functions and Operations
1	AM IN	I	This is an input terminal for AM detection signal.
2	FM IN	I	This is an input terminal for FM detection signal.
3	PILOT OUT	O	Output of MPX pilot signal (Connect to Pin18).
4	SEPA. ADJ.	–	Separation adjustment.
5	L OUT	O	Left channel signal output.
6	L	O	Input terminal of the Left channel Post AMP.
7	R	O	Input terminal of the right channel Post AMP.
8	R OUT	O	Right channel signal output
9	MUTE CONT	–	The mute time is controlled by the connected capacitor when turning the power switch on.
10	FM / AM	I	Change over the FM / AM input. "H" : AM, "L" : FM
11	MUTE OUT	–	Not use
12	GND	–	Ground terminal.
13	STEREO	O	Stereo indicator output. Stereo : "L", Mono : "H"
14	MUTE CONT	–	The mute time is controlled by the connected capacitor when changing over the FM / AM .
15	MUTE IN	I	Mute signal input. "H" : Mute on, "L" : Mute off.
16	LPF	–	Low pass filter of pilot detector.
17	LPF	–	While this terminal goes to "H", the VCO stop.
18	PILOT IN	I	PLL input.
19	LPF	–	Low-pass filter of PLL.
20	LPF	–	Low-pass filter of PLL.
21	VCO	I	Voltage controlled oscillator terminal.
22	V_{CC}	–	Power supply.

Internal Connecions for the FL Display Tube

■ ELU0001-101:(FL201)

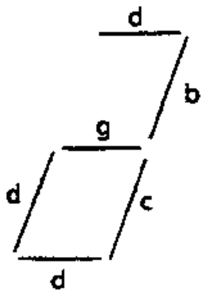
1. Grid Assignment


WAKE
UP
SLEEP
TIMER1
TIMER2
DAILY
ON TIME
AM
CLOCK
PM
AUTO
MONO
OFF TIME
AM PM
TUNED
STEREO
TIMER
REC
SOURCE
CANCEL
MEMORY
MHz
KHz
G13
G12
G11
G10
G9
G8
G7
Ⓐ
G6
G5
G4
G3
G2
G1

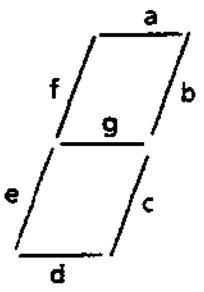
2 . Pin Connections

PIN NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CONNECTION	FL1	FL1	NP	NC	G13	S1	S2	G13	S3	S4	G12	G12	S5	G11	S6	G10	S7	G9	G9	S8	S9	G8	S10
PIN NO.	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46
CONNECTION	G7	S11	G6	S12	NC	NC	NC	G6	NC	G5	NC	G4	G4	NC	G3	NC	G2	NC	G1	NC	NP	F2	F2

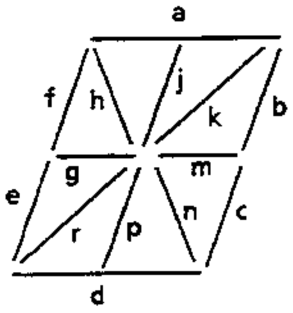
[Note] F: Filament S: Segment G: Grid NP: No Pin NC: Non Connection



G13



G6 ~ G12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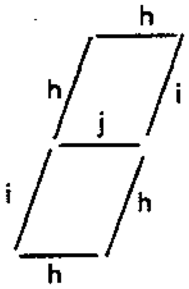
G1 ~ G5



Ⓐ

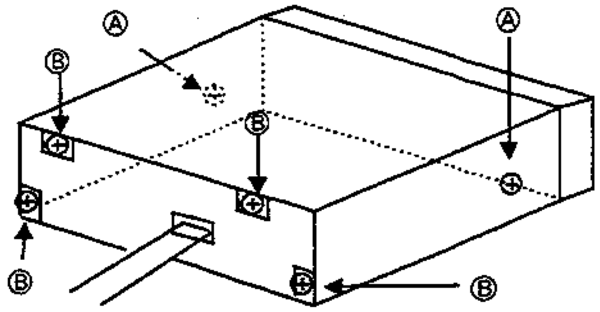
3. Anode Connections

	G13	G12	G11	G10	G9	G8	G7	G6	G5	G4	G3	G2	G1
S1	d	d	d	d	d	d	d	d	d	d	d	d	d
S2	–	e	e	e	e	e	e	e	e	e	e	e	e
S3	c	c	c	c	c	c	c	c	c	c	c	c	c
S4	g	–	–	–	–	–	–	kHz	r	r	r	r	m
S5	b	● ●	–	–	●	● ●	●	MHz	k	n	n	n	n
S6	DAILY	–	–	–	AM	–	STEREO	i	j,p	j,p	j,p	j,p	j,p
S7	TIMER2	g	g	g	g	g	g	g	g,m	g,m	g,m	g,m	g
S8	TIMER1	f	f	f	f	f	f	f	f	f	f	f	f
S9	SLEEP	b	b	b	b	b	b	b	b	b	b	b	b
S10	WAKE UP	a	a	a	a	a	a	a	a	a	a	a	a
S11	AM	PM	–	MONO	PM	–	TUNED	j	h	h	h	h	h,k
S12	ON TIME	CLOCK	–	AUTO	OFFTIME	–	TIMER REC	h	SOURCE	CANCEL	k	k	MEMORY

Disassembly Procedures

■ Removing the Top Cover

1. Remove the 4 screws Ⓑ fastening the rear side of the Top cover, and 2 screws Ⓐ fastening both sides.
2. Remove the Top Cover.

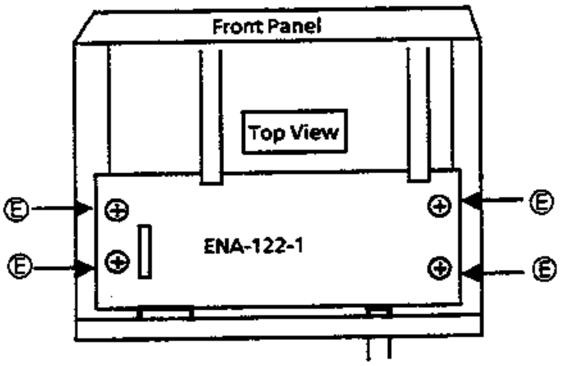


■ Removing the Front P.C.Board.

1. Remove the Top Cover.
2. Remove 4 screws Ⓒ fastening the P.C.Board, and remove it.

■ Removing the Main P.C. Board

1. Remove the Top Cover.
2. Remove the 4 screws Ⓔ fastening the P.C. Board.
3. Remove the screws Ⓓ Ⓕ and remove the P.C.Board.


Front Panel
Top View
ENA-122-1
Ⓔ
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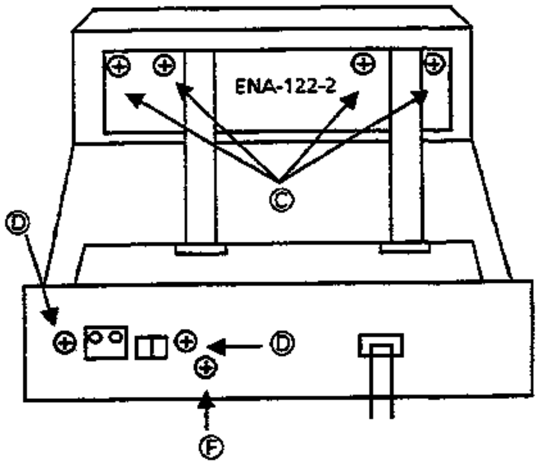
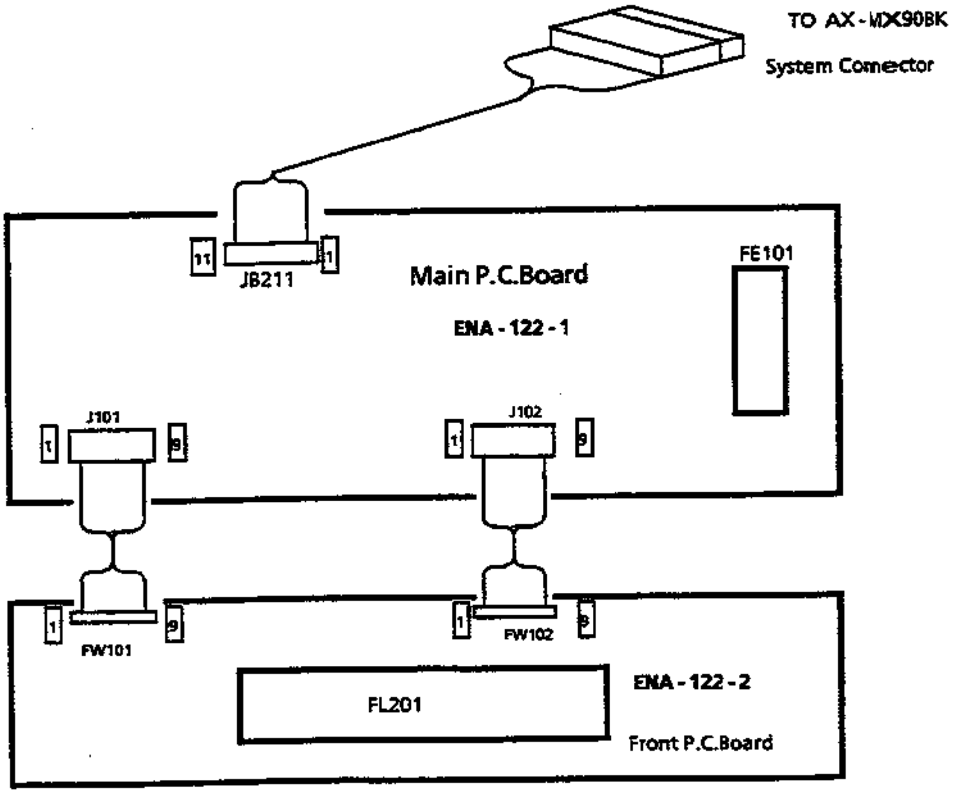
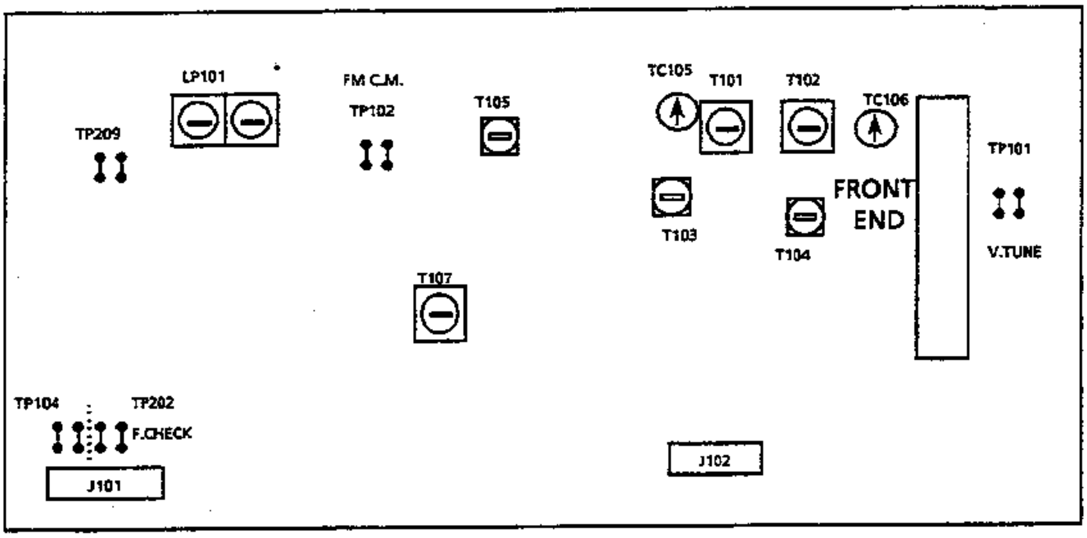


Connection Diagram


TO AX-MX90BK
System Connector
Main P.C.Board
ENA - 122 - 1
JB211
11
1
FE101
J101
1
9
J102
1
9
FW101
1
9
FW102
1
9
FL201
ENA - 122 - 2
Front P.C.Board

FM/AM Tuner Alignment Procedures



■ DISCHARGE
When dischargeing the backup, shortcircuit the two terminals of TP104.

1. FM section

■ FM oscillator

(1) Set the frequency display to "108.0MHz".
(2) Confirm that the FM inter-station noise is received.
(3) Confirm that the voltage of test point "TP101" is 8.0V±2.0V.
(4) Set the frequency display to "87.5MHz" and confirm the voltage of test point "TP101" is 1.6V±1.0V.

■ FM detector coil : T105

(1) Connect a digital voltmeter to test point "TP102", and receive to "100.1MHz" signal with SSG at 70dB.
(2) Adjust T105 so that the digital voltmeter reads 0±1.5mV.

2. MW section

Note ( ): Australia, the U.K. and Continental Europe
{ }: Channel space 9kHz for universal version
「 」: Channel space 10kHz for universalversion
[ ]: America, Canada

■ MW oscillator : T103

(1) Set the frequency display to (522kHz) {531kHz} 「530kHz」 [530kHz] and confirm that the voltage of test point TP101 is (0.9V±0.2V) {1.0V±0.2V} 「1.0V±0.2V」 [1.0V±0.2V].
(2) Set the frequency display to (1629kHz) {1602kHz} 「1600kHz」 [1710kHz] and confirm that the voltage of test point TP101 is (7.5V ± 0.8V){7.2V± 0.7V} 「7.2V± 0.7V」 [8.0V±0.8V].
(3) If its voltage exceeds the allowance, adjust T103 to obtain the voltage.

■ MW antenna coil : T101

(1) Connect a loop antenna to the "AM Loop" terminal on the rear panel.
(2) Adjust T101 to obtain the best receiving sensitivity on 600kHz or 603kHz.

■ MW antenna trimmer : TC105

(1) Adjust TC105 to obtain the best receiving sensitivity on 1400kHz or 1404kHz.

3. LW section (for Long Wave Version)

Note : [ ] for Italy

■ LW oscillator : T104

(1) Set the frequency display to 144kHz and adjust T104 so that the voltage of TP101 becomes 0.8V± 0.1V [0.8V± 0.1V].
(2) Set the frequency display to 353kHz[290kHz] and confirm that the voltage of test point TP101 becomes 8.0V± 0.9V [5.7V± 0.6V].

■ LW antenna coil : T102

(1) Connect a loop antenna to the "AM Loop" terminal on the rear panel.
(2) Adjust T102 to obtain the best receiving sensitivity on 164kHz [164kHz].

■ LW antenna trimmer : TC106

(1) Adjust TC106 to obtain the best receiving sensitivity on 353kHz [245kHz].

※ **Alternately adjust T102 and TC106 so that each sencitivity becomes maximum.**

PARTS LIST

Contents

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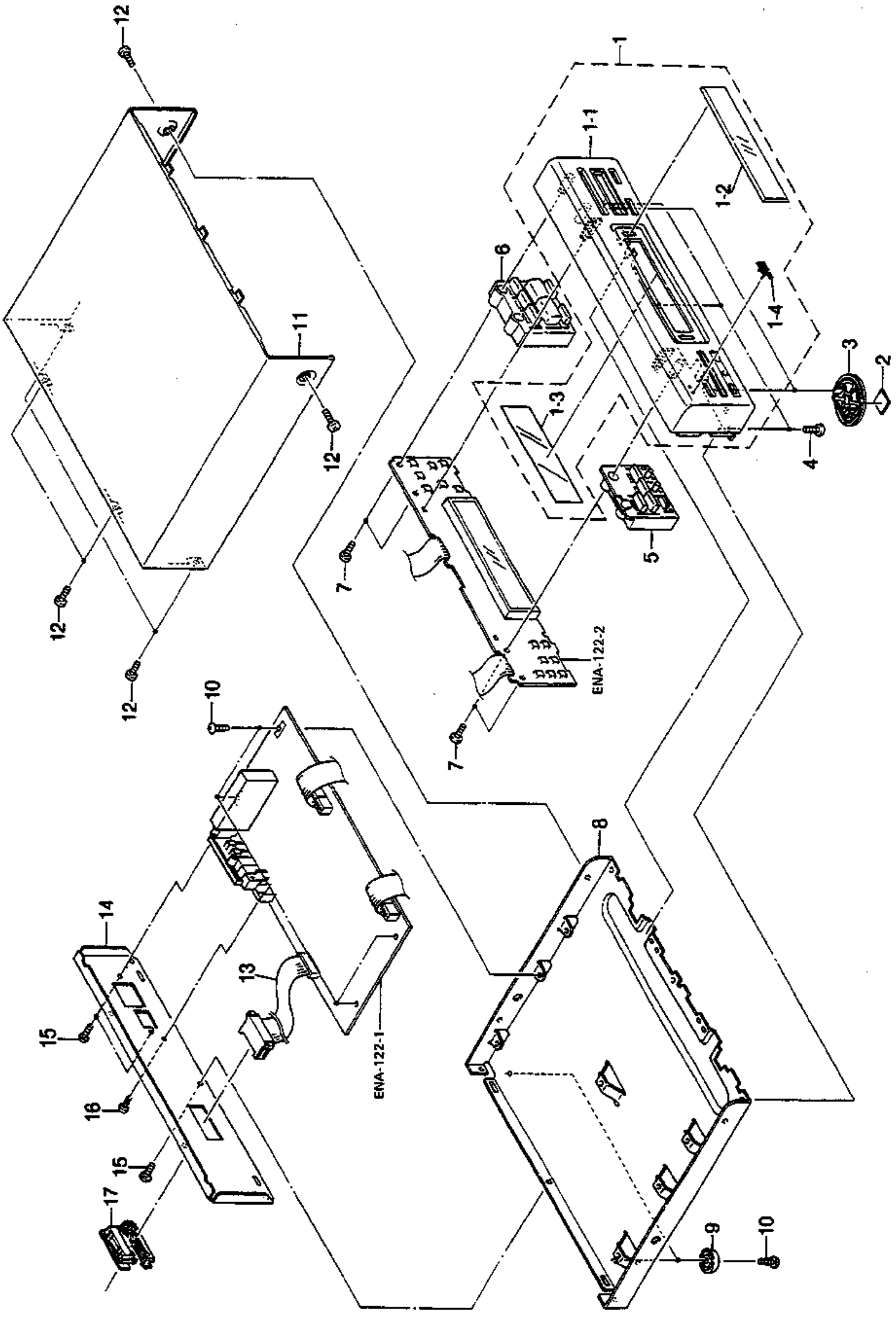
Printed Circuit Board Ass'y and Parts List 2-4
■ ENA-122 ☐ Tuner PC Board Ass'y 2-4
Packing Materials and Part Numbers 2-8

General Exploded View and Parts List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ENA-122-1
ENA-122-2

■Parts List

⚠	Item	Part Number	Part Name	Q'ty	Description	Areas
	1	EFP-FXMX70BKE(S	Front Panel Ass'y	1		
	1-1	E102331-003	Front Panel	1		
	1-2	E306956-002	Window Screen	1		
	1-3	E70561-028	FL Screen	1		
	1-4	PQ42561	JVC Mark	1		
	2	E75896-001	Spacer	2	for Front Foot	
	3	E306935-001	Foot	2	Front	
	4	SDSG3006M	Screw	3		
	5	E306952-001	Push Button	1	Tuning	
	6	E306954-002	Push Button	1	Preset	J , C , U , A
		E306954-003	Push Button	1	Preset	E , EF , G , GI , BS
	7	SDSF2608Z	Screw	4		
	8	E102327-002	Chassis Base	1		
	9	E47227-029	Foot	2	Rear	
	10	SBSG3008N	Screw	6		
	11	E206817-001	Metal Cover	1		
	12	SDSG3008M	Screw	6		
	13	EWP902-019	Plug Cord Ass'y	1	FW001(11Pin)	
	14	E206818-011	Rear Panel	1		J
		E206818-012	Rear Panel	1		C , A
		E206818-013	Rear Panel	1		U
		E206818-014	Rear Panel	1		E , EF , G , GI , BS
	15	SBSG3008M	Screw	3		
	16	SBST3008M	Screw	1		
	17	E305920-001	Cord Holder	1		
	–	E61029-009	Number Label	1		

⚠: Safety Parts

The Marks Designated Areas

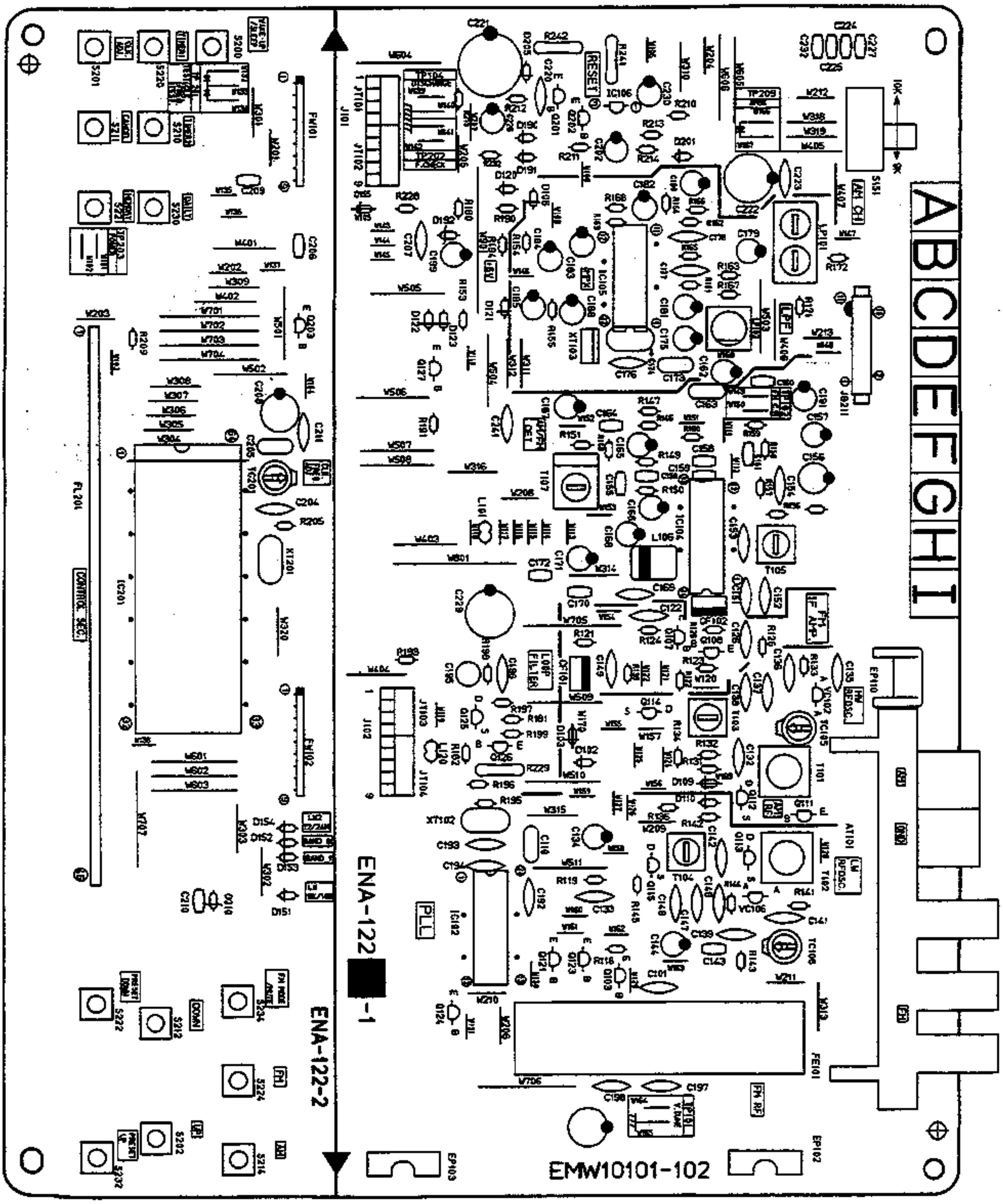
J……………the U.S.A.
C……………Canada
A……………Australia
G……………Germany
GI……………Italy

BS……………the U.K.
E , EF……………Continental Europe
U……………Universal Type
No mark indicates all areas.

Printed Circuit Board Ass'y and Parts List

■ENA-122 ☐ Tuner PC Board Ass'y

Note : ENA-122 ☐ varies according to the areas employed. See note (1) when placing an order.



A
B
C
D
E
F
G
H
I
ENA-122
-1
ENA-122-2
EMW10101-102
RESET
CONTROL SEC
PLL
IF AMP
LOOP FILTER
FM RF
FM OSC
LPF
IC201
IC104
IC102
IC105
FL201
T101
T102
T104
T105
T107
S151
10K
9K
FE101
EP101
EP102
EP103
J101
J102

Note (1)

PC Board Ass'y	Designated Areas
ENA-122 A	the U.S.A. , Canada
ENA-122 B	Universal Type
ENA-122 C	Australia
ENA-122 D	Continental Europe
ENA-122 E	Germany
ENA-122 F	the U.K.
ENA-122 G	Italy

Transistors

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	Q103	2SC461(B,C)	SILICON HITACHI	
	Q107	2SC535(B,C)	SILICON HITACHI	
	Q108	2SC461(B,C)	SILICON HITACHI	
	Q111	2SD2144S(VW)	SILICON ROHM	D
	Q111	2SD2144S(VW)	SILICON ROHM	E
	Q111	2SD2144S(VW)	SILICON ROHM	F
	Q111	2SD2144S(VW)	SILICON ROHM	G
	Q112	2SK301(Q,R)	F.E.T MATSUSHITA	
	Q113	2SK301(Q,R)	F.E.T MATSUSHITA	D
	Q113	2SK301(Q,R)	F.E.T MATSUSHITA	E
	Q113	2SK301(Q,R)	F.E.T MATSUSHITA	F
	Q113	2SK301(Q,R)	F.E.T MATSUSHITA	G
	Q114	2SK301(P,Q)	F.E.T MATSUSHITA	D
	Q114	2SK301(P,Q)	F.E.T MATSUSHITA	E
	Q114	2SK301(P,Q)	F.E.T MATSUSHITA	F
	Q114	2SK301(P,Q)	F.E.T MATSUSHITA	G
	Q115	2SK301(P,Q)	F.E.T MATSUSHITA	D
	Q115	2SK301(P,Q)	F.E.T MATSUSHITA	E
	Q115	2SK301(P,Q)	F.E.T MATSUSHITA	F
	Q115	2SK301(P,Q)	F.E.T MATSUSHITA	G
	Q121	DTA144ES	SILICON ROHM	D
	Q121	DTA144ES	SILICON ROHM	E
	Q121	DTA144ES	SILICON ROHM	F
	Q121	DTA144ES	SILICON ROHM	G
	Q123	DTA144ES	SILICON ROHM	
	Q124	DTA144ES	SILICON ROHM	
	Q125	2SK301(Q2)	F.E.T MATSUSHITA	
	Q126	2SC458(D)	SILICON HITACHI	
	Q127	DTC144ES	SILICON ROHM	
	Q201	2SC1740S(R,S)	SILICON ROHM	
	Q202	DTC114YS	SILICON ROHM	
	Q203	DTA114YS	SILICON ROHM	

△ : SAFETY PARTS

I. C. s

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	IC102	LC7218	I.C. SANYO	
	IC104	LA1266A	I.C. SANYO	
	IC105	LA3401	I.C. SANYO	
	IC106	MN1281(P,Q)	I.C. MATSUSHITA	
	IC201	HD614089SC35	I.C. HITACHI	

△ : SAFETY PARTS

Diodes

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	D102	1SS133	SILICON ROHM	D
	D102	1SS133	SILICON ROHM	E
	D102	1SS133	SILICON ROHM	F
	D102	1SS133	SILICON ROHM	G
	D103	1SS133	SILICON ROHM	D
	D103	1SS133	SILICON ROHM	E
	D103	1SS133	SILICON ROHM	F
	D103	1SS133	SILICON ROHM	G
	D106	1SS133	SILICON ROHM	
	D109	1SS133	SILICON ROHM	D
	D109	1SS133	SILICON ROHM	E
	D109	1SS133	SILICON ROHM	F
	D109	1SS133	SILICON ROHM	G
	D110	1SS133	SILICON ROHM	D
	D110	1SS133	SILICON ROHM	E
	D110	1SS133	SILICON ROHM	F
	D110	1SS133	SILICON ROHM	G
	D120	1SS133	SILICON ROHM	
	D121	1SS133	SILICON ROHM	
	D122	1SS133	SILICON ROHM	

△ : SAFETY PARTS

Diodes

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	D123	1SS133	SILICON ROHM	
	D151	1SS133	SILICON ROHM	C
	D152	1SS133	SILICON ROHM	A
	D153	1SS133	SILICON ROHM	B
	D154	1SS133	SILICON ROHM	A
	D154	1SS133	SILICON ROHM	G
	D155	1SS133	SILICON ROHM	B
	D190	1SS133	SILICON ROHM	
	D191	1SS133	SILICON ROHM	
	D192	MTZ5.1JC	ZENER ROHM	
	D201	1SS133	SILICON ROHM	
	D205	1SS133	SILICON ROHM	
	D210	MTZ5.6JC	ZENER ROHM	
	VC102	SVC342(L)	VARICAP SANYO	
	VC106	SVC342(L)	VARICAP SANYO	D
	VC106	SVC342(L)	VARICAP SANYO	E
	VC106	SVC342(L)	VARICAP SANYO	F
	VC106	SVC342(L)	VARICAP SANYO	G

△ : SAFETY PARTS

Capacitors

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	C101	QCF21HP-223	0.022MF 50V CERAMIC	
	C110	QCZ0205-155	1.5MF 25V CERAMIC	
	C122	QCF21HP-223	0.022MF 50V CERAMIC	
	C126	QCF21HP-223	0.022MF 50V CERAMIC	
	C132	QCS21HJ-561	560PF 50V CERAMIC	
	C133	QCF21HP-223	0.022MF 50V CERAMIC	
	C134	QETB1EM-106	10MF 25V ELECTRO	
	C135	QCC21EM-223	0.022MF 25V CERAMIC	
	C136	QCT26CH-180	18PF 50V CERAMIC	
	C137	QCT26CH-221	220PF 50V CERAMIC	
	C138	QCT26CH-241	240PF 50V CERAMIC	
	C139	QCC21EM-223	0.022MF 25V CERAMIC	D
	C139	QCC21EM-223	0.022MF 25V CERAMIC	E
	C139	QCC21EM-223	0.022MF 25V CERAMIC	F
	C139	QCC21EM-223	0.022MF 25V CERAMIC	G
	C141	QCS21HJ-270	27PF 50V CERAMIC	D
	C141	QCS21HJ-270	27PF 50V CERAMIC	E
	C141	QCS21HJ-270	27PF 50V CERAMIC	F
	C141	QCS21HJ-270	27PF 50V CERAMIC	G
	C142	QCY21HK-272	2700PF 50V CERAMIC	D
	C142	QCY21HK-272	2700PF 50V CERAMIC	E
	C142	QCY21HK-272	2700PF 50V CERAMIC	F
	C142	QCY21HK-272	2700PF 50V CERAMIC	G
	C143	QCHB1EZ-223	0.022MF 25V CERAMIC	D
	C143	QCHB1EZ-223	0.022MF 25V CERAMIC	E
	C143	QCHB1EZ-223	0.022MF 25V CERAMIC	F
	C143	QCHB1EZ-223	0.022MF 25V CERAMIC	G
	C144	QETB1EM-106	10MF 25V ELECTRO	D
	C144	QETB1EM-106	10MF 25V ELECTRO	E
	C144	QETB1EM-106	10MF 25V ELECTRO	F
	C144	QETB1EM-106	10MF 25V ELECTRO	G
	C146	QCT26CH-680	68PF 50V CERAMIC	D
	C146	QCT26CH-680	68PF 50V CERAMIC	E
	C146	QCT26CH-680	68PF 50V CERAMIC	F
	C146	QCT26CH-680	68PF 50V CERAMIC	G
	C147	QCT26CH-220	22PF 50V CERAMIC	D
	C147	QCT26CH-220	22PF 50V CERAMIC	E
	C147	QCT26CH-220	22PF 50V CERAMIC	F
	C147	QCT26CH-220	22PF 50V CERAMIC	G
	C148	QCT26CH-121	120PF 50V CERAMIC	D
	C148	QCT26CH-121	120PF 50V CERAMIC	E
	C148	QCT26CH-121	120PF 50V CERAMIC	F
	C148	QCT26CH-121	120PF 50V CERAMIC	G
	C149	QCF21HP-223	0.022MF 50V CERAMIC	
	C150	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C151	QCF21HP-223	0.022MF 50V CERAMIC	
	C152	QCF21HP-223	0.022MF 50V CERAMIC	
	C153	QCC21EM-223	0.022MF 25V CERAMIC	
	C154	QCF21HP-223.	0.022MF 50V CERAMIC	
	C155	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C156	QETB1CM-227	220MF 16V ELECTRO	
	C157	QETB1HM-474	0.47MF 50V ELECTRO	
	C158	QCBB1HK-101	100PF 50V CERAMIC	
	C159	QCBB1HK-101	100PF 50V CERAMIC	
	C160	QCBB1HK-221	220PF 50V CERAMIC	
	C161	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C162	QETB1EM-106	10MF 25V ELECTRO	
	C163	QFN81HK-102	1000PF 50V MYLAR	
	C164	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C165	QETB1HM-474	0.47MF 50V ELECTRO	
	C166	QETB1HM-225	2.2MF 50V ELECTRO	
	C167	QETB1HM-225	2.2MF 50V ELECTRO	
	C168	QETB1HM-475	4.7MF 50V ELECTRO	
	C169	QCF21HP-223	0.022MF 50V CERAMIC	
	C170	QCHB1EZ-223	0.022MF 25V CERAMIC	

△ : SAFETY PARTS

Capacitors

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	C171	QETB1EM-106	10MF 25V ELECTRO	
	C172	QCVB1CM-103	0.01MF 16V CERAMIC	
	C173	QFN81HK-393	0.039MF 50V MYLAR	A
	C173	QFN81HK-393	0.039MF 50V MYLAR	B
	C173	QFN81HK-223	0.022MF 50V MYLAR	C
	C173	QFN81HK-223	0.022MF 50V MYLAR	D
	C173	QFN81HK-223	0.022MF 50V MYLAR	E
	C173	QFN81HK-223	0.022MF 50V MYLAR	F
	C173	QFN81HK-223	0.022MF 50V MYLAR	G
	C174	QFLB1HK-473	0.047MF 50V MYLAR	
	C175	QETB1EM-106	10MF 25V ELECTRO	
	C176	QCY21HK-102	1000PF 50V CERAMIC	
	C177	QCS21HJ-821	820PF 50V CERAMIC	A
	C177	QCS21HJ-821	820PF 50V CERAMIC	B
	C177	QCS21HJ-391	390PF 50V CERAMIC	C
	C177	QCS21HJ-391	390PF 50V CERAMIC	D
	C177	QCS21HJ-391	390PF 50V CERAMIC	E
	C177	QCS21HJ-561	560PF 50V CERAMIC	F
	C177	QCS21HJ-391	390PF 50V CERAMIC	G
	C178	QCS21HJ-821	820PF 50V CERAMIC	A
	C178	QCS21HJ-821	820PF 50V CERAMIC	B
	C178	QCS21HJ-391	390PF 50V CERAMIC	C
	C178	QCS21HJ-391	390PF 50V CERAMIC	D
	C178	QCS21HJ-391	390PF 50V CERAMIC	E
	C178	QCS21HJ-561	560PF 50V CERAMIC	F
	C178	QCS21HJ-391	390PF 50V CERAMIC	G
	C179	QETB1HM-225	2.2MF 50V ELECTRO	
	C180	QETB1HM-225	2.2MF 50V ELECTRO	
	C181	QETB1EM-106	10MF 25V ELECTRO	
	C182	QETB1HM-225	2.2MF 50V ELECTRO	
	C183	QETB1HM-105	1MF 50V ELECTRO	
	C184	QETB1HM-105	1MF 50V ELECTRO	
	C185	QETB1HM-225	2.2MF 50V ELECTRO	
	C186	QETB1HM-474	0.47MF 50V ELECTRO	
	C191	QETB1HM-475	4.7MF 50V ELECTRO	
	C192	QCC21EM-473	0.047MF 25V CERAMIC	
	C193	QCS21KJ-180	18PF 50V CERAMIC	
	C194	QCS21KJ-180	18PF 50V CERAMIC	
	C195	QEN51HN-474	0.47MF 50V NON POLE	
	C196	QCY21HK-102	1000PF 50V CERAMIC	
	C197	QCF21HP-223	0.022MF 50V CERAMIC	
	C198	QCF21HP-103	0.01MF 50V CERAMIC	
	C199	QETB1HM-475	4.7MF 50V ELECTRO	
	C202	QETB1HM-225	2.2MF 50V ELECTRO	
	C204	QCT26CH-120	12PF 50V CERAMIC	
	C205	QCZ0202-155	1.5MF 25V CERAMIC	
	C206	QCVB1CM-103	0.01MF 16V CERAMIC	
	C207	QCF21HP-223	0.022MF 50V CERAMIC	
	C208	QEK51AM-227	220MF 10V ELECTRO	
	C209	QCVB1CM-103	0.01MF 16V CERAMIC	
	C210	QCVB1CM-103	0.01MF 16V CERAMIC	
	C211	QCF21HP-103	0.01MF 50V CERAMIC	
	C220	QCF21HP-103	0.01MF 50V CERAMIC	
	C221	QEA40HZ-10AB	ELECTRO	
	C222	QETB1CM-477	470MF 16V ELECTRO	
	C223	QCF21HP-103	0.01MF 50V CERAMIC	
	C224	QC6B1HK-102	1000PF 50V CERAMIC	
	C225	QC6B1HK-102	1000PF 50V CERAMIC	
	C226	QETB1AM-227	220MF 10V ELECTRO	
	C227	QCVB1CM-103	0.01MF 16V CERAMIC	
	C229	QETB1CM-477	470MF 16V ELECTRO	A
	C229	QETB1CM-227	220MF 16V ELECTRO	B
	C229	QETB1CM-227	220MF 16V ELECTRO	C
	C229	QETB1CM-227	220MF 16V ELECTRO	D
	C229	QETB1CM-227	220MF 16V ELECTRO	E
	C229	QETB1CM-227	220MF 16V ELECTRO	F
	C229	QETB1CM-227	220MF 16V ELECTRO	G
	C230	QETB1EM-476	47MF 25V ELECTRO	
	C232	QCVB1CM-103	0.01MF 16V CERAMIC	
	C241	QCF21HP-223	0.022MF 50V CERAMIC	

△ : SAFETY PARTS

Resistors

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	R118	QRD167J-332	3.3K 1/6W CARBON	
	R119	QRD167J-221	220 1/6W CARBON	
	R121	QRD167J-391	390 1/6W CARBON	
	R122	QRD167J-272	2.7K 1/6W CARBON	
	R123	QRD167J-102	1K 1/6W CARBON	
	R124	QRD167J-681	680 1/6W CARBON	
	R125	QRD167J-332	3.3K 1/6W CARBON	
	R126	QRD167J-221	220 1/6W CARBON	
	R131	QRD167J-331	330 1/6W CARBON	
	R132	QRD167J-103	10K 1/6W CARBON	
	R133	QRD167J-473	47K 1/6W CARBON	
	R134	QRD167J-103	10K 1/6W CARBON	D
	R134	QRD167J-103	10K 1/6W CARBON	E
	R134	QRD167J-103	10K 1/6W CARBON	F
	R134	QRD167J-103	10K 1/6W CARBON	G

△ : SAFETY PARTS

Resistors

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	R135	QRD167J-470	47 1/6W CARBON	
	R136	QRD167J-103	10K 1/6W CARBON	
	R141	QRD167J-472	4.7K 1/6W CARBON	D
	R141	QRD167J-472	4.7K 1/6W CARBON	E
	R141	QRD167J-472	4.7K 1/6W CARBON	F
	R141	QRD167J-472	4.7K 1/6W CARBON	G
	R142	QRD167J-331	330 1/6W CARBON	D
	R142	QRD167J-331	330 1/6W CARBON	E
	R142	QRD167J-331	330 1/6W CARBON	F
	R142	QRD167J-331	330 1/6W CARBON	G
	R143	QRD167J-103	10K 1/6W CARBON	D
	R143	QRD167J-103	10K 1/6W CARBON	E
	R143	QRD167J-103	10K 1/6W CARBON	F
	R143	QRD167J-103	10K 1/6W CARBON	G
	R144	QRD167J-473	47K 1/6W CARBON	D
	R144	QRD167J-473	47K 1/6W CARBON	E
	R144	QRD167J-473	47K 1/6W CARBON	F
	R144	QRD167J-473	47K 1/6W CARBON	G
	R145	QRD167J-103	10K 1/6W CARBON	D
	R145	QRD167J-103	10K 1/6W CARBON	E
	R145	QRD167J-103	10K 1/6W CARBON	F
	R145	QRD167J-103	10K 1/6W CARBON	G
	R146	QRD167J-560	56 1/6W CARBON	
	R147	QRD167J-103	10K 1/6W CARBON	
	R148	QRD167J-103	10K 1/6W CARBON	
	R149	QRD167J-223	22K 1/6W CARBON	
	R150	QRD167J-103	10K 1/6W CARBON	
	R151	QRD167J-222	2.2K 1/6W CARBON	
	R153	QRD167J-103	10K 1/6W CARBON	
	R154	QRD167J-103	10K 1/6W CARBON	
	R155	QRD167J-562	5.6K 1/6W CARBON	
	R156	QRD167J-822	8.2K 1/6W CARBON	
	R157	QRD167J-103	10K 1/6W CARBON	
	R158	QRD167J-183	18K 1/6W CARBON	A
	R158	QRD167J-273	27K 1/6W CARBON	B
	R158	QRD167J-273	27K 1/6W CARBON	C
	R158	QRD167J-273	27K 1/6W CARBON	D
	R158	QRD167J-273	27K 1/6W CARBON	E
	R158	QRD167J-273	27K 1/6W CARBON	F
	R158	QRD167J-273	27K 1/6W CARBON	G
	R159	QRD167J-561	560 1/6W CARBON	
	R160	QRD167J-562	5.6K 1/6W CARBON	A
	R160	QRD167J-562	5.6K 1/6W CARBON	B
	R160	QRD167J-183	18K 1/6W CARBON	C
	R160	QRD167J-183	18K 1/6W CARBON	D
	R160	QRD167J-183	18K 1/6W CARBON	E
	R160	QRD167J-822	8.2K 1/6W CARBON	F
	R160	QRD167J-183	18K 1/6W CARBON	G
	R161	QRD167J-823	82K 1/6W CARBON	A
	R161	QRD167J-823	82K 1/6W CARBON	B
	R161	QRD167J-124	120K 1/6W CARBON	C
	R161	QRD167J-124	120K 1/6W CARBON	D
	R161	QRD167J-124	120K 1/6W CARBON	E
	R161	QRD167J-823	82K 1/6W CARBON	F
	R161	QRD167J-124	120K 1/6W CARBON	G
	R162	QRD167J-823	82K 1/6W CARBON	A
	R162	QRD167J-823	82K 1/6W CARBON	B
	R162	QRD167J-124	120K 1/6W CARBON	C
	R162	QRD167J-124	120K 1/6W CARBON	D
	R162	QRD167J-124	120K 1/6W CARBON	E
	R162	QRD167J-823	82K 1/6W CARBON	F
	R162	QRD167J-124	120K 1/6W CARBON	G
	R163	QRD167J-472	4.7K 1/6W CARBON	A
	R163	QRD167J-472	4.7K 1/6W CARBON	B
	R163	QRD167J-332	3.3K 1/6W CARBON	C
	R163	QRD167J-332	3.3K 1/6W CARBON	D
	R163	QRD167J-332	3.3K 1/6W CARBON	E
	R163	QRD167J-332	3.3K 1/6W CARBON	F
	R163	QRD167J-332	3.3K 1/6W CARBON	G
	R164	QRD167J-472	4.7K 1/6W CARBON	A
	R164	QRD167J-472	4.7K 1/6W CARBON	B
	R164	QRD167J-332	3.3K 1/6W CARBON	C
	R164	QRD167J-332	3.3K 1/6W CARBON	D
	R164	QRD167J-332	3.3K 1/6W CARBON	E
	R164	QRD167J-332	3.3K 1/6W CARBON	F
	R164	QRD167J-332	3.3K 1/6W CARBON	G
	R165	QRD167J-184	180K 1/6W CARBON	A
	R165	QRD167J-184	180K 1/6W CARBON	B
	R165	QRD167J-274	270K 1/6W CARBON	C
	R165	QRD167J-274	270K 1/6W CARBON	D
	R165	QRD167J-274	270K 1/6W CARBON	E
	R165	QRD167J-274	270K 1/6W CARBON	F
	R165	QRD167J-274	270K 1/6W CARBON	G
	R166	QRD167J-184	180K 1/6W CARBON	A
	R166	QRD167J-184	180K 1/6W CARBON	B
	R166	QRD167J-274	270K 1/6W CARBON	C
	R166	QRD167J-274	270K 1/6W CARBON	D
	R166	QRD167J-274	270K 1/6W CARBON	E
	R166	QRD167J-274	270K 1/6W CARBON	F
	R166	QRD167J-274	270K 1/6W CARBON	G
	R167	QRD167J-393	39K 1/6W CARBON	A
	R167	QRD167J-393	39K 1/6W CARBON	B
	R167	QRD167J-473	47K 1/6W CARBON	C
	R167	QRD167J-473	47K 1/6W CARBON	D
	R167	QRD167J-473	47K 1/6W CARBON	E

△ : SAFETY PARTS

Resistors

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	R167	QRD167J-473	47K 1/6W CARBON	F
	R167	QRD167J-473	47K 1/6W CARBON	G
	R168	QRD167J-103	10K 1/6W CARBON	
	R169	QRD167J-103	10K 1/6W CARBON	
	R171	QRD167J-682	6.8K 1/6W CARBON	
	R172	QRD167J-682	6.8K 1/6W CARBON	
	R180	QRD167J-103	10K 1/6W CARBON	
	R181	QRD167J-222	2.2K 1/6W CARBON	
	R182	QRD167J-181	180 1/6W CARBON	
	R190	QRD167J-103	10K 1/6W CARBON	
	R191	QRD167J-562	5.6K 1/6W CARBON	
	R193	QRD167J-103	10K 1/6W CARBON	
	R194	QRD167J-103	10K 1/6W CARBON	
	R195	QRD167J-473	47K 1/6W CARBON	
	R196	QRD167J-103	10K 1/6W CARBON	A
	R196	QRD167J-103	10K 1/6W CARBON	B
	R196	QRD167J-103	10K 1/6W CARBON	C
	R196	QRD167J-222	2.2K 1/6W CARBON	D
	R196	QRD167J-222	2.2K 1/6W CARBON	E
	R196	QRD167J-222	2.2K 1/6W CARBON	F
	R196	QRD167J-222	2.2K 1/6W CARBON	G
	R197	QRD167J-222	2.2K 1/6W CARBON	
	R198	QRD167J-332	3.3K 1/6W CARBON	A
	R198	QRD167J-332	3.3K 1/6W CARBON	B
	R198	QRD167J-332	3.3K 1/6W CARBON	C
	R198	QRD167J-822	8.2K 1/6W CARBON	D
	R198	QRD167J-822	8.2K 1/6W CARBON	E
	R198	QRD167J-822	8.2K 1/6W CARBON	F
	R198	QRD167J-822	8.2K 1/6W CARBON	G
	R199	QRD167J-472	4.7K 1/6W CARBON	
	R205	QRD167J-473	47K 1/6W CARBON	
	R209	QRD167J-104	100K 1/6W CARBON	
	R210	QRD167J-222	2.2K 1/6W CARBON	
	R211	QRD167J-103	10K 1/6W CARBON	
	R212	QRD167J-473	47K 1/6W CARBON	
	R213	QRD167J-472	4.7K 1/6W CARBON	
	R214	QRD167J-102	1K 1/6W CARBON	
	R215	QRD167J-470	47 1/6W CARBON	
	R228	QRD167J-222	2.2K 1/6W CARBON	
⚠	R229	QRD14CJ-220S	22 1/4W UNF.CARBON	A
⚠	R229	QRZ0077-680	68 1/4W FUSIBLE	B
⚠	R229	QRZ0077-680	68 1/4W FUSIBLE	C
⚠	R229	QRZ0077-680	68 1/4W FUSIBLE	D
⚠	R229	QRZ0077-680	68 1/4W FUSIBLE	E
⚠	R229	QRZ0077-680	68 1/4W FUSIBLE	F
⚠	R229	QRZ0077-680	68 1/4W FUSIBLE	G
	R232	QRD167J-153	15K 1/6W CARBON	
⚠	R241	QRD14CJ-2R2S	2.2 1/4W UNF.CARBON	A
⚠	R241	QRZ0077-4R7	4.7 1/4W FUSIBLE	B
⚠	R242	QRD14CJ-3R9S	3.9 1/4W UNF.CARBON	A
⚠	R242	QRZ0077-4R7	4.7 1/4W FUSIBLE	B
⚠	R242	QRZ0077-4R7	4.7 1/4W FUSIBLE	C
⚠	R242	QRZ0077-4R7	4.7 1/4W FUSIBLE	D
⚠	R242	QRZ0077-4R7	4.7 1/4W FUSIBLE	E
⚠	R242	QRZ0077-4R7	4.7 1/4W FUSIBLE	F
⚠	R242	QRZ0077-4R7	4.7 1/4W FUSIBLE	G

⚠ : SAFETY PARTS

Others

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
		EMW10101-103	CIRCUIT BOARD	
	K401	ENZ8101-007	INDUCTOR	
	K402	ENZ8101-007	INDUCTOR	
	L101	EQL4004-1R0	INDUCTOR	
	L106	EQL3001-102K	INDUCTOR	
	L120	EQL4004-1R0	INDUCTOR	
	S151	QSS6A12-E01	SLIDE SWITCH(AM CH.SPACE)	B
	S200	ESP0001-018	TACT SWITCH(WAKE-UP/SLEEP)	
	S201	ESP0001-018	TACT SWITCH(CLOCK ADJ)	
	S202	ESP0001-018	TACT SWITCH(UP)	
	S210	ESP0001-018	TACT SWITCH(TIMER 2)	
	S211	ESP0001-018	TACT SWITCH(CANCEL)	
	S212	ESP0001-018	TACT SWITCH(DOWN)	
	S214	ESP0001-018	TACT SWITCH(AM)	
	S220	ESP0001-018	TACT SWITCH(TIMER 1)	
	S221	ESP0001-018	TACT SWITCH(MEMORY)	
	S222	ESP0001-018	TACT SWITCH(PRESET DOWN)	
	S224	ESP0001-018	TACT SWITCH(FM)	
	S230	ESP0001-018	TACT SWITCH(DAILY)	
	S232	ESP0001-018	TACT SWITCH(PRESET UP)	
	S234	ESP0001-018	TACT SWITCH(FM MODE/MUTE)	
	T101	EQR1111-014	AM RF COIL	
	T102	EQR1111-005	AM RF COIL	D
	T102	EQR1111-005	AM RF COIL	E
	T102	EQR1111-005	AM RF COIL	F

⚠ : SAFETY PARTS

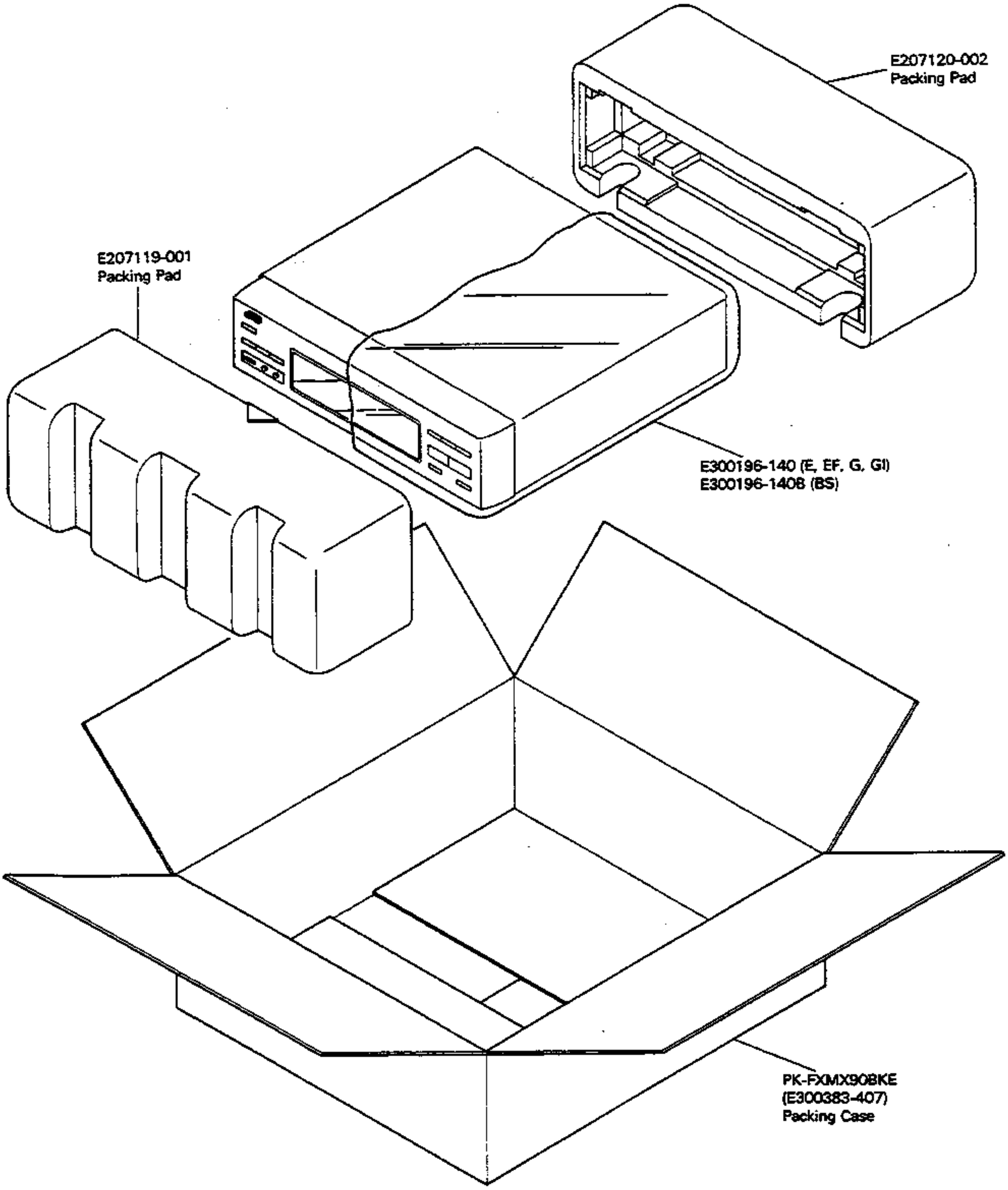
Others

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	T102	EQR1111-005	AM RF COIL	G
	T103	EQR1207-017	MW OSC COIL	
	T104	EQR1307-010	LW OSC COIL	D
	T104	EQR1307-010	LW OSC COIL	E
	T104	EQR1307-010	LW OSC COIL	F
	T104	EQR1307-010	LW OSC COIL	G
	T105	EQT2140-017	I.F. TRANSFORMER	
	T107	ECB1560-008	CERAMIC FILTER	
	AT101	EMB41YV-401K	ANTENNA TERMINAL	A
	AT101	EMB41YV-401K	ANTENNA TERMINAL	B
	AT101	EMB41YV-401K	ANTENNA TERMINAL	C
	AT101	EMB41YV-301K	ANTENNA TERMINAL	D
	AT101	EMB41YV-301K	ANTENNA TERMINAL	E
	AT101	EMB41YV-301K	ANTENNA TERMINAL	F
	AT101	EMB41YV-301K	ANTENNA TERMINAL	G
	BK201	E306958-002	FL DISPLAY HOLDER	
	CF101	ECB2123-006R	CERAMIC FILTER	A
	CF101	ECB2123-006R	CERAMIC FILTER	B
	CF101	ECB2123-006R	CERAMIC FILTER	C
	CF101	ECB2118-007R	CERAMIC FILTER	D
	CF101	ECB2118-007R	CERAMIC FILTER	E
	CF101	ECB2118-007R	CERAMIC FILTER	F
	CF101	ECB2118-007R	CERAMIC FILTER	G
	CF102	ECB2123-006R	CERAMIC FILTER	A
	CF102	ECB2123-006R	CERAMIC FILTER	B
	CF102	ECB2123-006R	CERAMIC FILTER	C
	CF102	ECB2118-007R	CERAMIC FILTER	D
	CF102	ECB2118-007R	CERAMIC FILTER	E
	CF102	ECB2118-007R	CERAMIC FILTER	F
	CF102	ECB2118-007R	CERAMIC FILTER	G
	EP102	E70859-001	EARTH PLATE	
	EP103	E70859-001	EARTH PLATE	
	EP110	E70225-001	EARTH PLATE	
	FE101	EAF2203-001	FRONT END	A
	FE101	EAF2203-001	FRONT END	B
	FE101	EAF2203-001	FRONT END	C
	FE101	EAF2203-003	FRONT END	D
	FE101	EAF2203-003	FRONT END	E
	FE101	EAF2203-003	FRONT END	F
	FE101	EAF2203-003	FRONT END	G
	FL201	ELU0001-101	FL TUBE	
	FS201	E306805-021	FELT SPACER	
	FW001	EWP902-019	PLUG WIRE ASSY(11PIN)	
	FW101	EWR39B-25LST	FLAT WIRE(9PIN)	
	FW102	EWR39B-25LST	FLAT WIRE(9PIN)	
	JB211	EMV7130-011	CONNECTOR(11PIN)	
	JT101	EMV7122-004	CONNECTOR(4PIN)	
	JT102	EMV7122-005	CONNECTOR(5PIN)	
	JT103	EMV7122-004	CONNECTOR(4PIN)	
	JT104	EMV7122-005	CONNECTOR(5PIN)	
	LP101	EQF0101-002	LOW PASS FILTER	
	LP102	EQF0102-001	LOW PASS FILTER	D
	LP102	EQF0102-001	LOW PASS FILTER	E
	LP102	EQF0102-001	LOW PASS FILTER	F
	LP102	EQF0102-001	LOW PASS FILTER	G
	TC105	ENZ1003-006	TRIMMER	
	TC106	ENZ1003-006	TRIMMER	D
	TC106	ENZ1003-006	TRIMMER	E
	TC106	ENZ1003-006	TRIMMER	F
	TC106	ENZ1003-006	TRIMMER	G
	TC201	ENZ1003-015	TRIMMER	
	XT102	ECX0007-200KC	RESONATOR	
	XT103	ECX0000-456KR	RESONATOR	
	XT201	ECX4194-304CF	RESONATOR	

⚠ : SAFETY PARTS

Packing Materials and Part Numbers

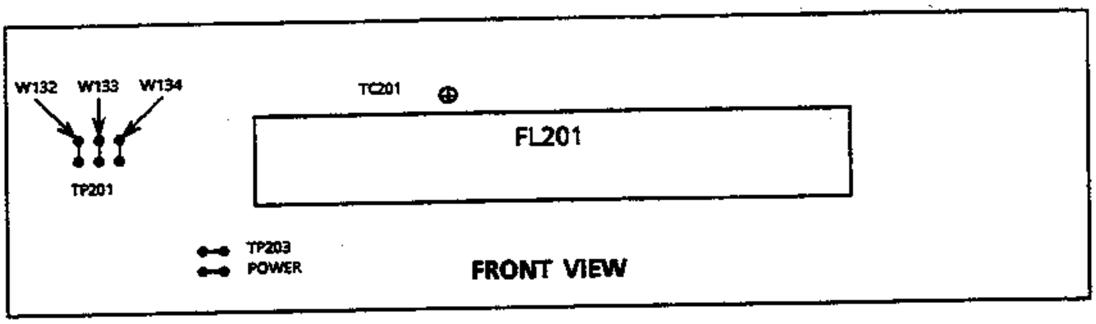
(Only for Continental Europe , the U.K. , Germany , Italy)


E207120-002
Packing Pad
E207119-001
Packing Pad
E300196-140 (E, EF, G, GI)
E300196-1408 (BS)
PK-FXMX90BKE
(E300383-407)
Packing Case

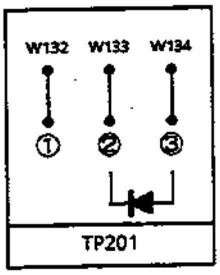
The Marks Designated Areas

G----------------------Germany
BS--------------------the U.K.
GI---------------------Italy
E , EF----------------Continental Europe
No mark indicates all areas.

Clock Generator Frequency Adjustment


W132
W133
W134
TP201
TC201
FL201
TP203
POWER
FRONT VIEW

1. Switch OFF the AX-MX90BK's power source,then pull out the AC plug.
2. Shortcircuit TP201's terminals ② and ③ with the diode as shown in the accompanying diagram, then insert the AC plug into the receptable to switch the power ON.
3. Confirm that the tuner's FL display is off, then remove the diode and connect the frequency counter to TP 202(FREQ. CHECK).
4. Adjust TC201 so that the counter becomes 34,952.5 ± 0.15 Hz.


W132
W133
W134
①
②
③
TP201

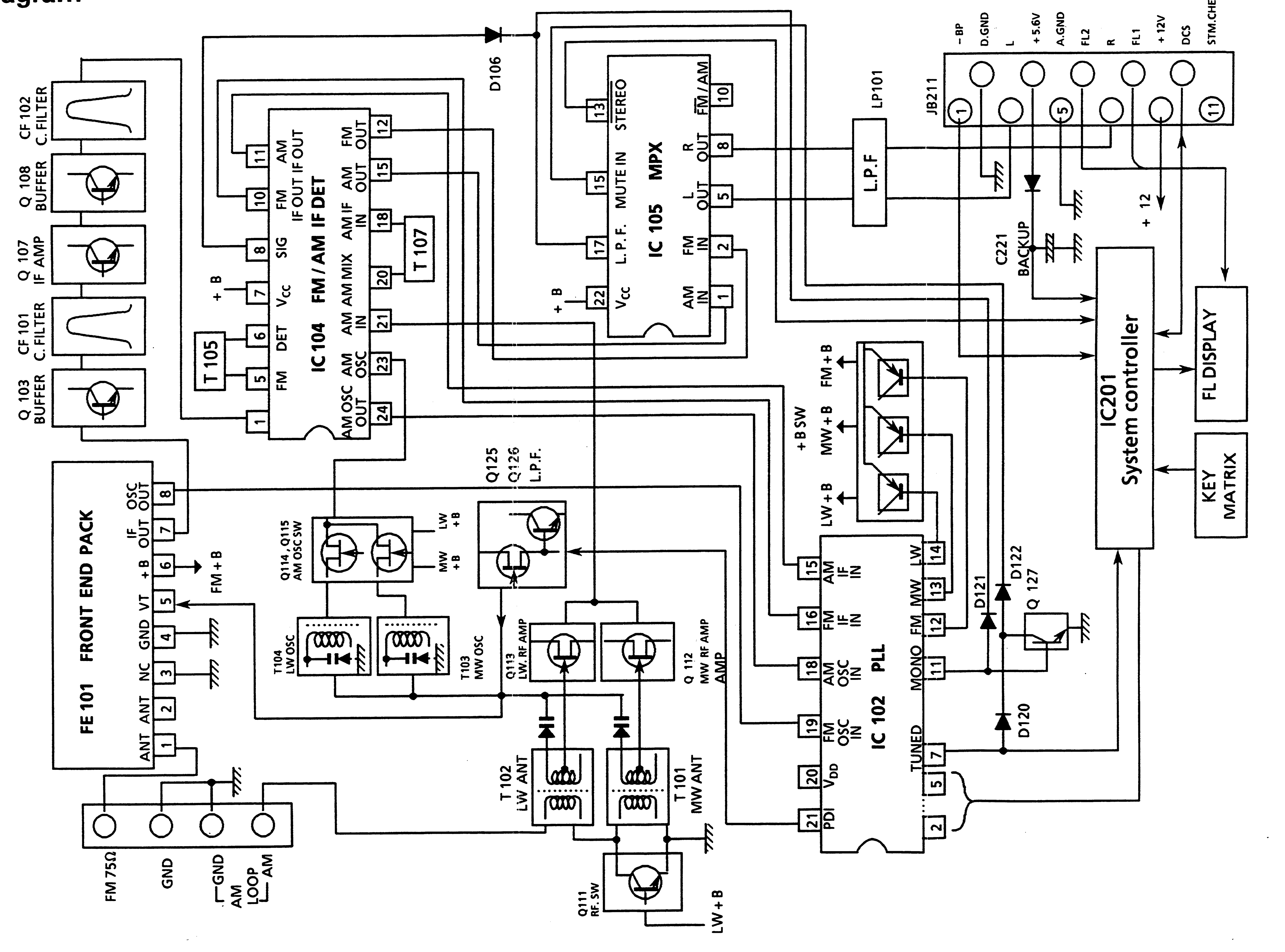
Example :
1SS133
1SS119
1S2473

FX-MX90BK

VICTOR COMPANY OF JAPAN, LIMITED
AUDIO PRODUCTS DIVISION, 1644, SHIMOTSURUMA, YAMATO-SHI, KANAGAWA-KEN, 242, JAPAN

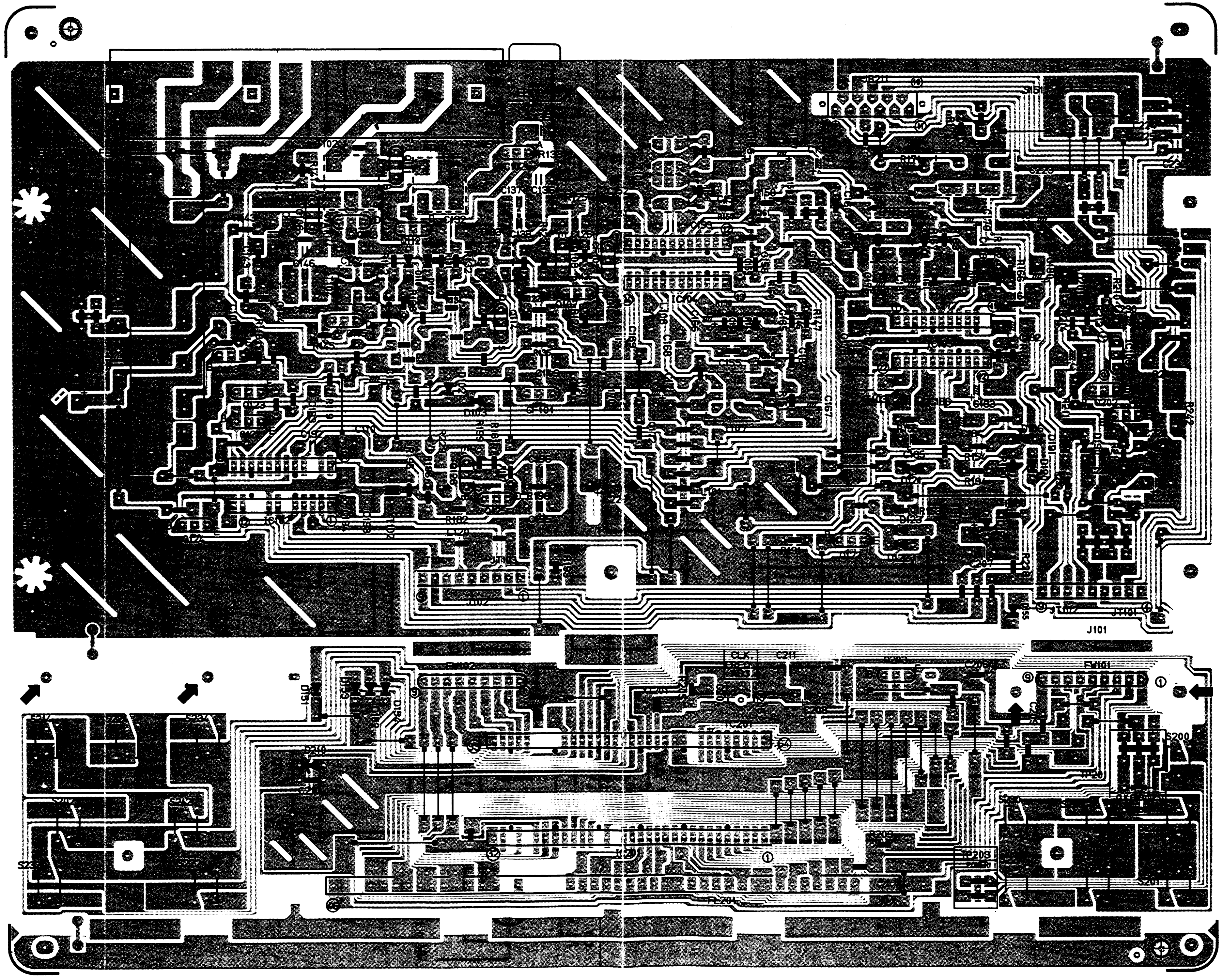
Printed in Japan
9106 [GL]

Block Diagram


CF 102 C. FILTER
Q 108 BUFFER
Q 107 IF AMP
CF 101 C. FILTER
Q 103 BUFFER
IC 104 FM / AM IF DET
AM IF OUT
FM IF OUT
SIG
VCC
DET
FM
AM OSC OUT
FM OUT
AM OUT
AM IF IN
AM MIX
AM IN
AM OSC
+ B
T 105
T 107
D106
IC 105 MPX
STEREO
MUTE IN
L.P.F.
VCC
AM IN
FM IN
L OUT
R OUT
FM/AM
LP101
L.P.F
JB211
– BP
D.GND
L
+ 5.6V
A.GND
FL2
R
FL1
+ 12V
DCS
STM.CHE
C221 BACKUP
+ 12
IC201 System controller
FL DISPLAY
KEY MATRIX
FM + B
MW + B
LW + B
+ B SW
IC 102 PLL
AM IF IN
FM IF IN
AM OSC IN
FM OSC IN
VDD
PDI
LW
MW
FM
MONO
TUNED
D121
D122
Q 127
D120
FE 101 FRONT END PACK
OSC OUT
IF OUT
+ B
VT
GND
NC
ANT
ANT
FM + B
Q114, Q115 AM OSC SW
LW + B
MW + B
T104 LW OSC
T103 MW OSC
Q125 Q126 L.P.F.
Q113 LW. RF AMP
Q 112 MW RF AMP
T 102 LW ANT
T 101 MW ANT
Q111 RF. SW
LW + B
FM 75Ω
GND
GND
AM LOOP
AM

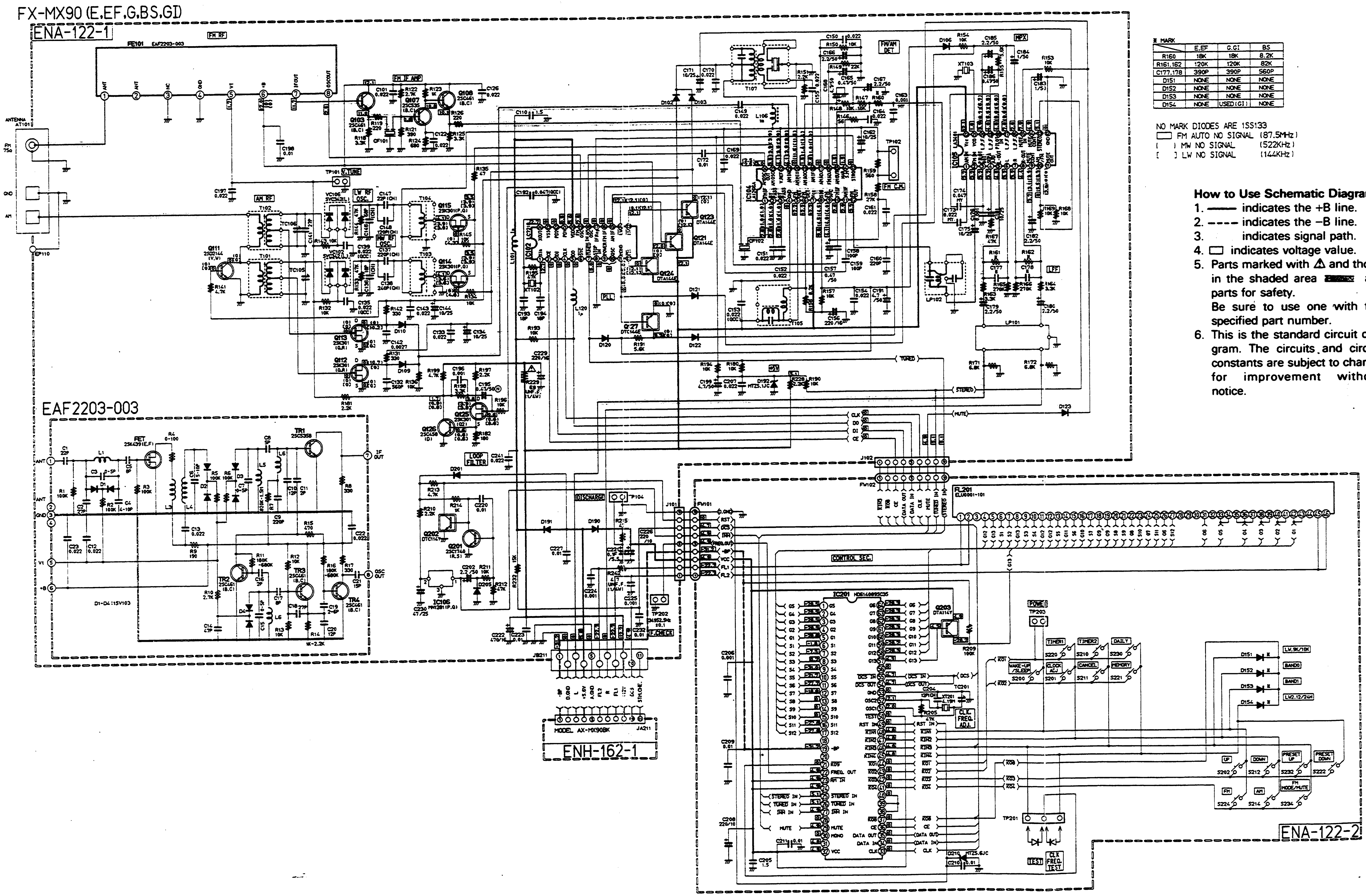
Printed Circuit Board

■ Tuner PCB (ENA 122)


J101
FW101
IC201
CLK
C211
S200
S201
FL201

Schematic Diagrams

■ Tuner 1


FX-MX90 (E,EF,G,BS,GI)
ENA-122-1
EAF2203-003
ENA-122-2
ENH-162-1
MODEL AX-MX90BK
FE101
CONTROL SEC.
IC201
FL201
J101
J102
JB211
JA211
TP201
TEST
CLK FREQ. TEST
CLK FREQ. ADJ.
DISCHARGE
LOOP FILTER
F. CHECK
FM RF
AM RF
FM IF AMP
LW RF OSC.
MW RF OSC.
V. TUNE
FM/AM DET
MPX
FM C.H.
LPF
PLL
POWER
TIMER1
TIMER2
DAILY
WAKE-UP /SLEEP
CLOCK ADJ
CANCEL
MEMORY
UP
DOWN
PRESET UP
PRESET DOWN
FM
AM
FM MODE/MUTE
LW,9K/10K
BAND0
BAND1
LW2,12/24H

※ MARK

	E.EF	G.GI	BS
R160	18K	18K	8.2K
R161.162	120K	120K	82K
C177.178	390P	390P	560P
D151	NONE	NONE	NONE
D152	NONE	NONE	NONE
D153	NONE	NONE	NONE
D154	NONE	USED(GI)	NONE

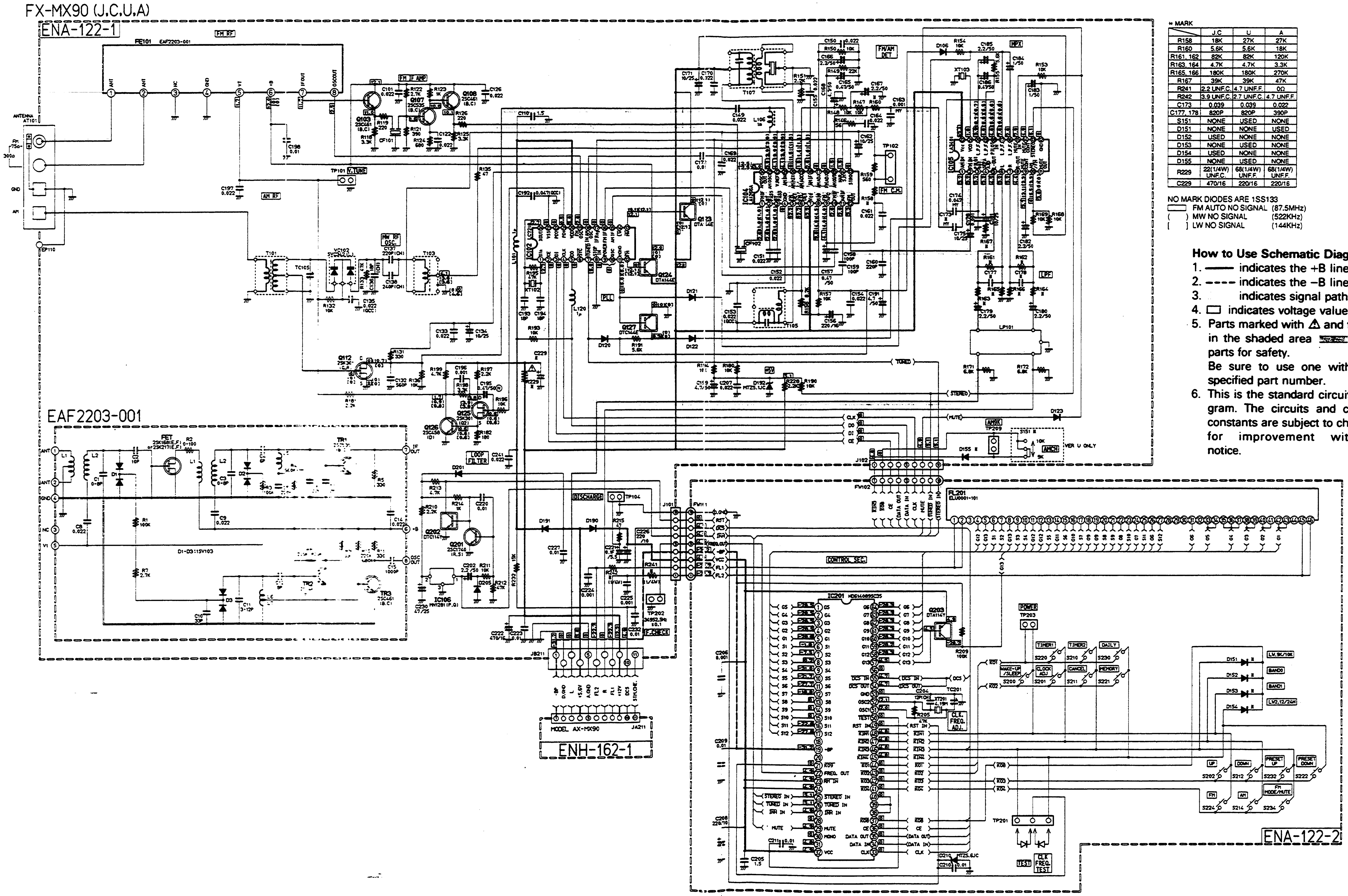
NO MARK DIODES ARE 1SS133
▭ FM AUTO NO SIGNAL (87.5MHz)
( ) MW NO SIGNAL (522KHz)
[ ] LW NO SIGNAL (144KHz)

How to Use Schematic Diagrams

1. ―― indicates the +B line.
2. ---- indicates the −B line.
3. indicates signal path.
4. ▭ indicates voltage value.
5. Parts marked with ⚠ and those in the shaded area ▨ are parts for safety. Be sure to use one with the specified part number.
6. This is the standard circuit diagram. The circuits and circuit constants are subject to change for improvement without notice.

FX-MX90BK

■ Tuner 2


FX-MX90 (J.C.U.A)
ENA-122-1
FE101
FM RF
ANTENNA AT101
FM IF AMP
AM RF
MW RF OSC.
FM/AM DET
FM C.M.
HPX
LPF
LP101
PLL
TUNED
STEREO
MUTE
AMCH
LOOP FILTER
DISCHARGE
TP104
J101
J102
J8211
IF CHECK
EAF2203-001
FET
TR1
TR2
TR3
CONTROL SEC.
IC201
Q203
FL201
POWER
TP203
TP201
TIMER1
TIMER2
DAILY
MAKE-UP /SLEEP
CLOCK ADJ.
CANCEL
MEMORY
UP
DOWN
PRESET UP
PRESET DOWN
FM
AM
FM MODE/MUTE
CLK FREQ. ADJ.
TEST
CLK FREQ. TEST
VER U ONLY
MODEL AX-MX90
ENH-162-1
ENA-122-2

∗ MARK

	J.C	U	A
R158	18K	27K	27K
R160	5.6K	5.6K	18K
R161, 162	82K	82K	120K
R163, 164	4.7K	4.7K	3.3K
R165, 166	180K	180K	270K
R167	39K	39K	47K
R241	2.2 UNF.C.	4.7 UNF.F.	0Ω
R242	3.9 UNF.C.	2.7 UNF.C.	4.7 UNF.F.
C173	0.039	0.039	0.022
C177, 178	820P	820P	390P
S151	NONE	USED	NONE
D151	NONE	NONE	USED
D152	USED	NONE	NONE
D153	NONE	USED	NONE
D154	USED	NONE	NONE
D155	NONE	USED	NONE
R229	22(1/4W) UNF.C.	68(1/4W) UNF.F.	68(1/4W) UNF.F.
C229	470/16	220/16	220/16

NO MARK DIODES ARE 1SS133
▭ FM AUTO NO SIGNAL (87.5MHz)
( ) MW NO SIGNAL (522KHz)
[ ] LW NO SIGNAL (144KHz)

How to Use Schematic Diagrams

1. —— indicates the +B line.
2. ---- indicates the −B line.
3. indicates signal path.
4. ▭ indicates voltage value.
5. Parts marked with ⚠ and those in the shaded area ▨ are parts for safety. Be sure to use one with the specified part number.
6. This is the standard circuit diagram. The circuits and circuit constants are subject to change for improvement without notice.

(No. 20271)

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JVC

SERVICE MANUAL

COMPACT COMPONENT SYSTEM

CA-MX90BK/DX-MX90BK

(Unit No. TD-MX90BK)

- For instruction manual, please refer to the CA-MX90BK(SM.No.20267) or DX-MX90BK(SM.No.20268).
- AX-MX90BK is needed for power supply etc when servicing.

Contents

Safety Precautions 1-2
Block Diagram 1-3
Description of Main LSI 1-4
Internal Block Diagram of other ICs 1-5
Disassembly Procedures 1-7
Adjustment Procedures 1-9
Schematic Diagrams .... Insertion
Printed Circuit Board .... Insertion
Connection Diagram .... Insertion
Parts List .... Separate-volume Insertion

No. 2027
Jun. 199

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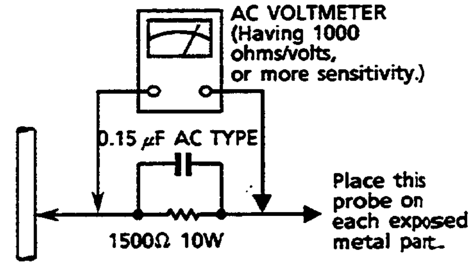
Safety Precautions

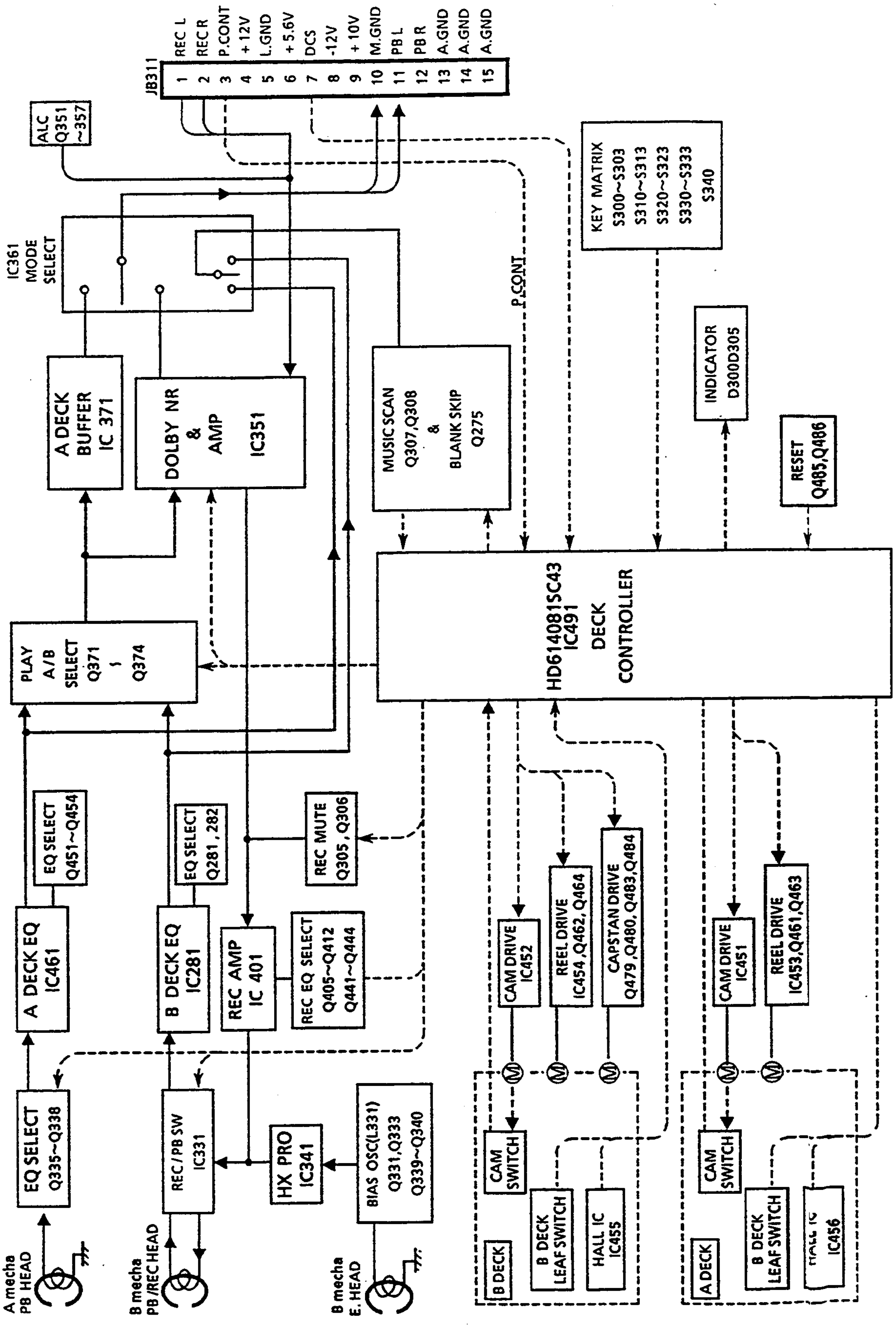
1. The design of this product contains special hardware and many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Services should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the product should not be made. Any design alterations of the product should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacture of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the Parts List of Service Manual. Electrical components having such features are identified by shading on the schematics and by (⚠) on the Parts List in the Service Manual. The use of a substitute repalcement which does not have the same safety characteristics as the recommended replacement parts shown in the Parts List of Service Manual may create shock, fire, or other hazards.
4. The leads in the products are routed and dressed with ties, clamps, tubings, barriers and the like to be separated from live parts, high temperature parts, moving parts and/or sharp edges for the prevention of electric shock and fire hazard. When service is required, the original lead routing and dress should be observed, and it should be confirmed that they have been returned to normal, after re-assembling.
5. Leakage currnet check (Electrical shock hazard testing)
   After re-assembling the product, always perform an isolation check on the exposed metal parts of the product (antenna terminals, knobs, metal cabinet, screw heads, headphone jack, contorl shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.
   Do not use a line isolation transformer during this check.
   - Plug the AC line cord directly into the AC outlet. Using a "Leakage Current Tester", measure the leakage current from each exposed metal parts of the cabinet, particularily any exposed metal part having a return path to the chassis, to a known good earth ground. Any leakage current must not exceed 0.5mA AC (r.m.s.).
   - Alternate check method
     Plug the AC line cord directly into the AC outlet. Use an AC voltmeter having, 1,000 ohms per volt or more sensitivity in the following manner. Connect a 1,500Ω 10 W resistor paralleled by a 0.15 μF AC-type capacitor between an exposed metal part and a known good earth ground.
     Measure the AC voltage across the resistor with the AC voltmeter.
     Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and meausre the AC voltage across the resistor.
     Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75 V AC (r.m.s.). This corresponds to 0.5 mA AC (r.m.s.).


AC VOLTMETER
(Having 1000 ohms/volts, or more sensitivity.)
0.15 μF AC TYPE
1500Ω 10W
Place this probe on each exposed metal part.
Good earth ground

Warning

1. This equipment has been designed and manufactured to meet international safety standards.
2. It is the legal responsibility of the repairer to ensure that these safety standards are maintained.
3. Repairs must be made in accordance with the relevant safety standards.
4. It is essential that safety critical components are replaced by approved parts.
5. If mains voltage selector is provided, check setting for local voltage.

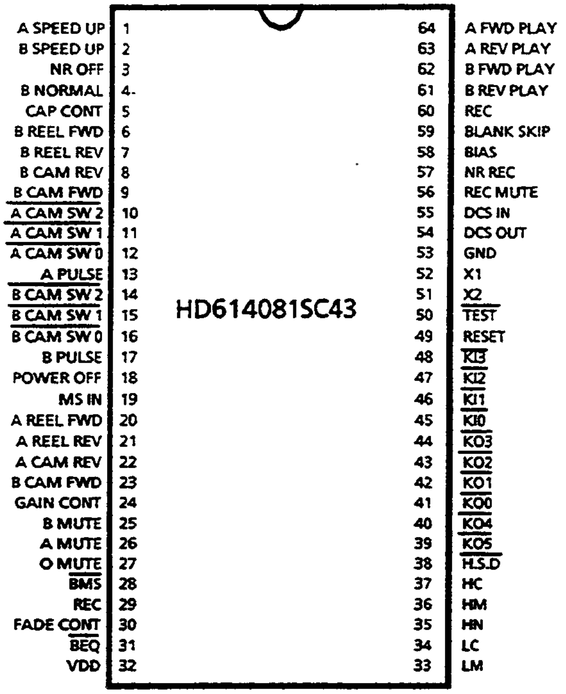
Block Diagram


JB311
1 REC L
2 REC R
3 P.CONT
4 +12V
5 L.GND
6 +5.6V
7 DCS
8 -12V
9 +10V
10 M.GND
11 PB L
12 PB R
13 A.GND
14 A.GND
15 A.GND
ALC Q351 ~357
IC361 MODE SELECT
A DECK BUFFER IC 371
DOLBY NR & AMP IC351
MUSIC SCAN Q307,Q308 & BLANK SKIP Q275
P.CONT
KEY MATRIX S300~S303 S310~S313 S320~S323 S330~S333 S340
INDICATOR D300D305
RESET Q485,Q486
HD614081SC43 IC491 DECK CONTROLLER
PLAY A/B SELECT Q371 ~ Q374
EQ SELECT Q451~Q454
EQ SELECT Q281,282
REC MUTE Q305,Q306
A DECK EQ IC461
B DECK EQ IC281
REC AMP IC 401
REC EQ SELECT Q405~Q412 Q441~Q444
CAM DRIVE IC452
REEL DRIVE IC454,Q462,Q464
CAPSTAN DRIVE Q479,Q480,Q483,Q484
CAM DRIVE IC451
REEL DRIVE IC453,Q461,Q463
M
EQ SELECT Q335~Q338
REC/PB SW IC331
HX PRO IC341
BIAS OSC(L331) Q331,Q333 Q339~Q340
CAM SWITCH
B DECK LEAF SWITCH
HALL IC IC455
B DECK
CAM SWITCH
B DECK LEAF SWITCH
HALL IC IC456
A DECK
A mecha PB HEAD
B mecha PB/REC HEAD
B mecha E. HEAD

Description of Main LSI

■ HD614081SC43(IC491) : Deck Controller

1. Terminal Layout


HD614081SC43
A SPEED UP 1
B SPEED UP 2
NR OFF 3
B NORMAL 4
CAP CONT 5
B REEL FWD 6
B REEL REV 7
B CAM REV 8
B CAM FWD 9
A CAM SW 2 10
A CAM SW 1 11
A CAM SW 0 12
A PULSE 13
B CAM SW 2 14
B CAM SW 1 15
B CAM SW 0 16
B PULSE 17
POWER OFF 18
MS IN 19
A REEL FWD 20
A REEL REV 21
A CAM REV 22
B CAM FWD 23
GAIN CONT 24
B MUTE 25
A MUTE 26
O MUTE 27
BMS 28
REC 29
FADE CONT 30
BEQ 31
VDD 32
64 A FWD PLAY
63 A REV PLAY
62 B FWD PLAY
61 B REV PLAY
60 REC
59 BLANK SKIP
58 BIAS
57 NR REC
56 REC MUTE
55 DCS IN
54 DCS OUT
53 GND
52 X1
51 X2
50 TEST
49 RESET
48 KI3
47 KI2
46 KI1
45 KI0
44 KO3
43 KO2
42 KO1
41 KO0
40 KO4
39 KO5
38 H.S.D
37 HC
36 HM
35 HN
34 LC
33 LM

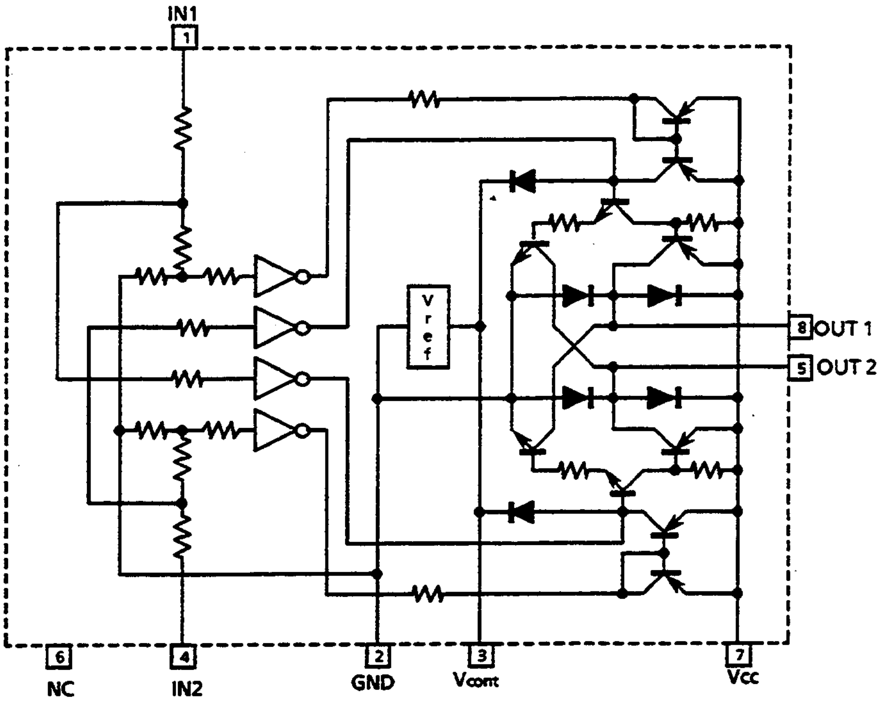
2. Key Matrix

	KEY IN 0	KEY IN1	KEY IN2	KEY IN 3
KEY OUT 0	A◀	A◀◀	A▶▶	A▶
KEY OUT 1	B◀	B◀◀	B▶▶	B▶
KEY OUT 2	A	B	B◎	B❚❚
KEY OUT 3	H.DUB	BLANK SKIP		CD D. REC
KEY OUT 2	B PACK	REV REC	FWD REC	A PACK
KEY OUT 3	REV MODE	B CrO2	B METAL	

3. Pin Function

Pin NO.	symbol	I/O	Function and Operations	Pin NO.	symbol	I/O	Function and Operations
1	A SPEED UP	O	A deck speed control output	33	LM	O	"H" when recording to Metal at N-speed
2	B SPEED UP	O	B deck speed control output	34	LC	O	"H" when recording to CrO2 at N-speed
3	NR OFF	O	NR ON/OFF signal output	35	NH	O	"H" when recording to Normal at H-speed
4	B NORMAL	O	"H" when normal tape in the B Deck	36	HM	O	"H" when recording to Metal at H-speed
5	CAP CONT	O	Capstan control output	37	HC	O	"H" when recording to CrO2 at H-speed
6	B REEL FWD	O	FWD direction control for B reel motor	38	HSD	O	High speed dubbing control signal
7	B REEL REV		REV direction control for B reel motor	39	KO5	O	Key matrix output 5
8	B CAM REV		REV direction control for B cam motor	40	KO4	O	Key matrix output 4
9	B CAM FWD		FWD direction control for B cam motor	41	KO0	O	Key matrix output 0
10	A CAM SW 2		A CAM SW input	42	KO1	O	Key matrix output 1
11	A CAM SW 1	O	A CAM SW input	43	KO2	O	Key matrix output 2
12	A CAM SW 0	O	A CAM SW input	44	KO3	O	Key matrix output 3
13	A PULSE	O	A CAM SW input	45	KI0	I	Key matrix input 0
14	B CAM SW 2	I	B CAM SW input	46	KI1	I	Key matrix input 1
15	B CAM SW 1	I	B CAM SW input	47	KI2	I	Key matrix input 2
16	B CAM SW 0	I	B CAM SW input	48	KI3	I	Key matrix input 3
17	B PULSE	I	B CAM SW input	49	RESET	I	Reset signal input
18	POWER OFF	I	Power ON/OFF input	50	TEST	-	Test terminal
19	MS IN	I	Blank detector terminal at music scan	51	X2	I	Clock oscilator input
20	A REEL FWD	O	FWD direction control for A reel motor	52	X1	O	Clock oscilator output
21	A REEL REV	O	REV direction control for A reel motor	53	GND	-	Ground
22	A CAM REV	O	REV direction control for A cam motor	54	DCS OUT	O	Compulink signal output
23	A CAM FWD	O	FWD direction control for A cam motor	55	DCS IN	I	Compulink signal input
24	GAIN CONT	O	Gain control output for M.S amp	56	REC MUTE	O	Recording mute control signal output
25	B MUTE	O	B deck muting control output	57	NR REC	O	NR recording control signal output
26	A MUTE	O	A deck muting control output	58	BIAS	O	"H" with recording
27	O MUTE	O	Play back muting control output	59	BLANK SKIP	O	BLANK SKIP LED control signal output
28	BMS	O	"H" with B deck PB and M.S	60	REC	O	REC LED control signal output
29	REC	O	Recording control ("H" with recording)	61	B REV LED	O	B REV LED control signal output
30	FADE CONT	O	Fade control signal output	62	B FWD LED	O	B FWD LED control signal output
31	BEQ	O	"H" with CrO2 SW off of B deck	63	A REV LED	O	A REV LED control signal output
32	VDD	-	Power supply	64	A FWD LED	O	A FWD LED control signal output

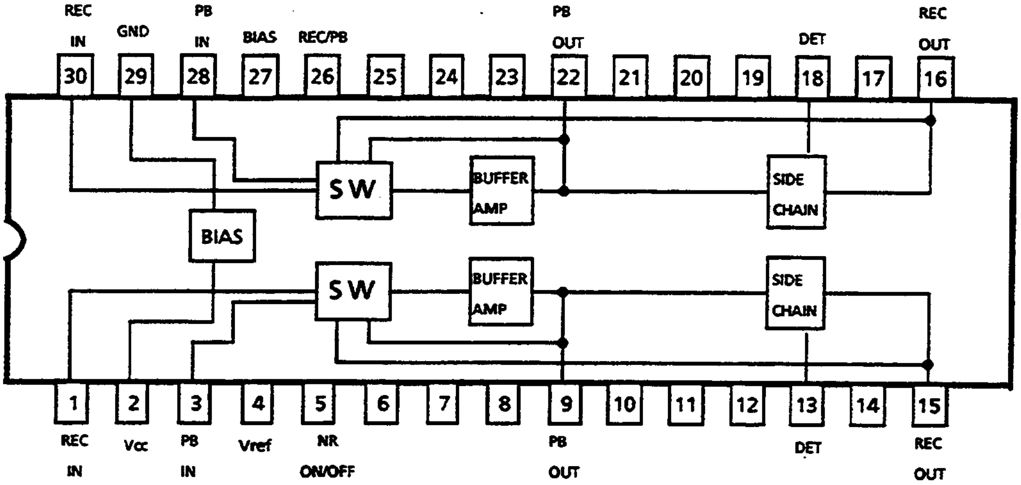
■ LB1639-CV (IC581) : Motor Driver


IN1
1
V
r
e
f
8
OUT 1
5
OUT 2
6
NC
4
IN2
2
GND
3
Vcont
7
Vcc

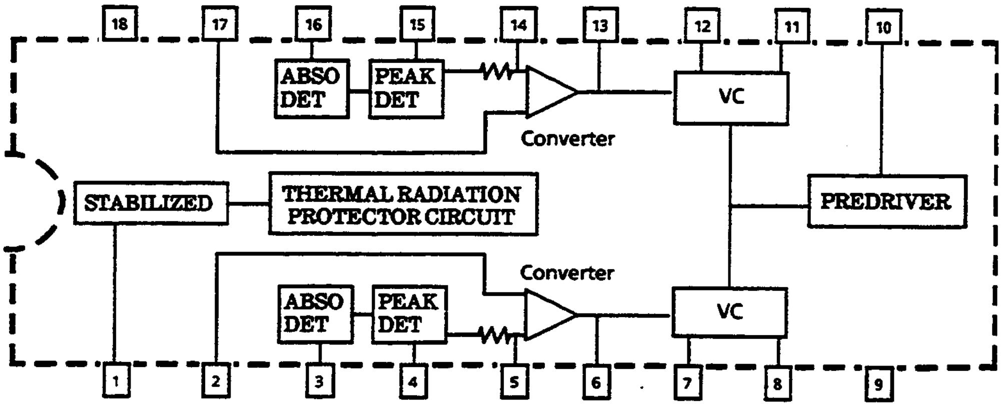
IN 1	IN 2	OUT 1	OUT 2	MOTOR
H	L	H	L	CLOCKWISE
L	H	L	H	COUNTER-CLOCKWISE
H	H	OFF	OFF	WAITING
L	L	OFF	OFF	WAITING

Internal Block Diagram of other ICs

■ HA 12142 (IC351) : Dolby B-C Noise Reduction Amplifier IC


REC IN
GND
PB IN
BIAS
REC/PB
PB OUT
DET
REC OUT
30
29
28
27
26
25
24
23
22
21
20
19
18
17
16
SW
BUFFER AMP
SIDE CHAIN
BIAS
SW
BUFFER AMP
SIDE CHAIN
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
REC IN
Vcc
PB IN
Vref
NR ON/OFF
PB OUT
DET
REC OUT

■ μPC1297CA (IC341) : Dolby HX PRO System IC


18
17
16
15
14
13
12
11
10
ABSO DET
PEAK DET
Converter
VC
STABILIZED
THERMAL RADIATION PROTECTOR CIRCUIT
PREDRIVER
Converter
ABSO DET
PEAK DET
VC
1
2
3
4
5
6
7
8
9

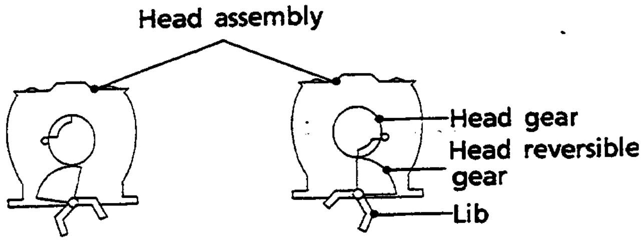
6. Removing the Cassette Mechanism Units

■ Head assembly

1. Unsolder the flexible wire on P.C.Board, then remove the two screws "G" installing the Head assembly.

Installing the Head assembly

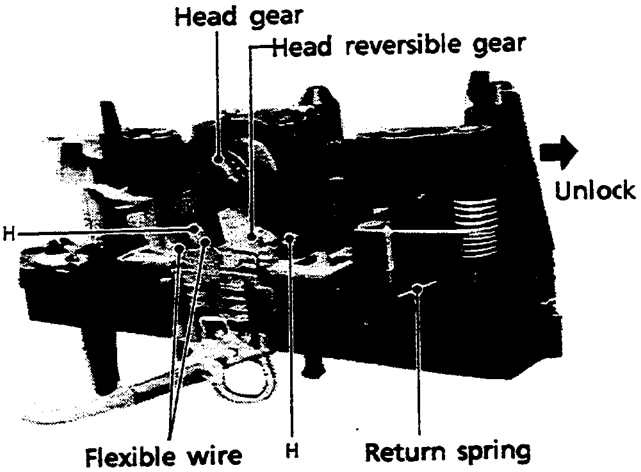
1. The direction of the head for forward or reverse mode is switched by the cam gear.
2. The point of the rib for the head assembly installation differs with the head direction.
3. See the right figure.


Head assembly
Head gear
Head reversible gear
Lib

Head sets FWD mode. Head sets REV mode.

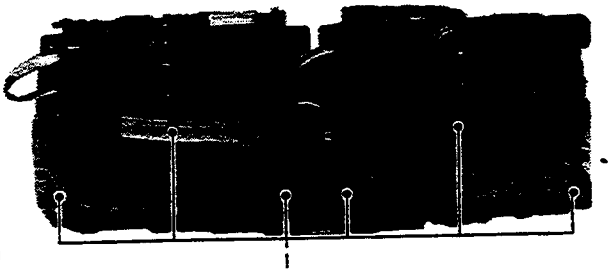
■ Pinch Roller Arm assembly

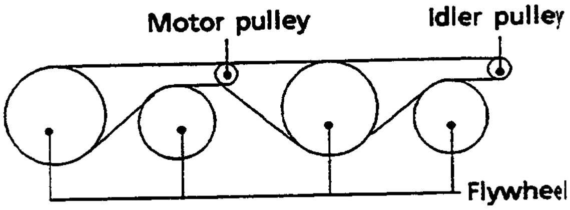
1. Detach the Pinch Roller Return Spring (small outside spring) from the hook.
2. Remove the pawl fixing the Pinch Roller Arm assembly.


Head gear
Head reversible gear
Unlock
H
Flexible wire
H
Return spring

■ FM Bracket and Flywheel

1. Remove the 6 screws "H" fixing the FM Bracket.
2. Unsolder the reel motor from reel motor P.C.B.
3. Remove the pawl fixing the FM Bracket and Cassette Mechanism assembly.
4. Remove the belt. Fit the belt by the method shown in figure.
5. Detach the Flywheel.(The washer can be removed in the direction of the Pinch Roller)




Motor pulley
Idler pulley
Flywheel

■ Leaf Switch P.C.B

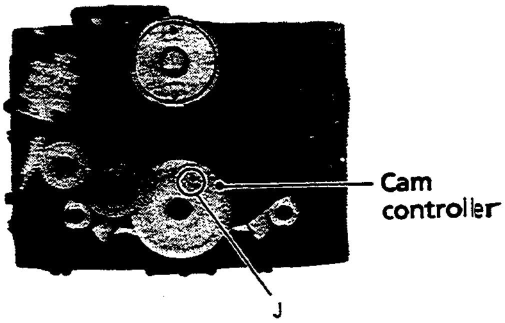
1. Remove the pawl fixing the Leaf Switch P.C.B.

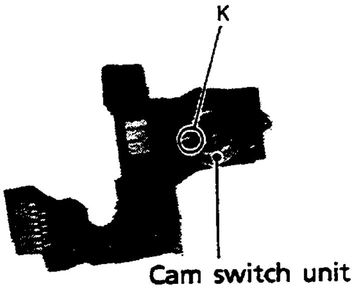
■ CAM Switch P.C.B

1. Remove the FM Bracket and Flywheel.
2. Remove the pawl fixing the Sensor P.C.B.

■ CAM Motor

1. Remove the Cassette Mechanism assembly on FM Bracket.
2. Remove the pawl fixing the CAM Motor, then remove the motor.


Cam controller
J


K
Cam switch unit

Disassembly Procedures

1. Removing the Top Cover

(1). Remove 2 screws on both sides of the metal cover.

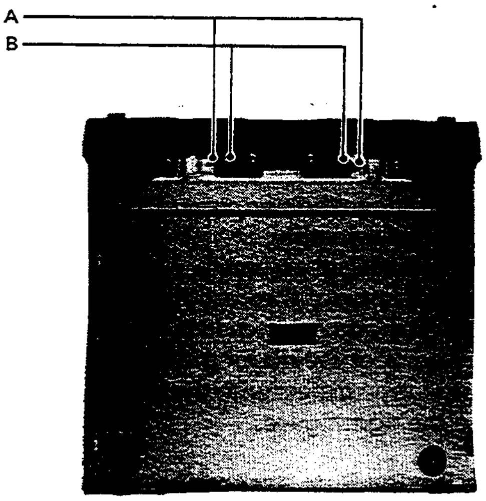
(2). Remove 4 screws located on the rear panel.

(3). Slightly open both sides of the metal cover to the left and right, and raise the rear side. Then slowly lift it up and streight backward.

2. Removing the Front Panel assembly

(1). Remove the 2 screws "A" fixing the front panel from the bottom, then the 2 screws "B" fixing the mechanism.

(2). Remove all connectors from the front pannel.



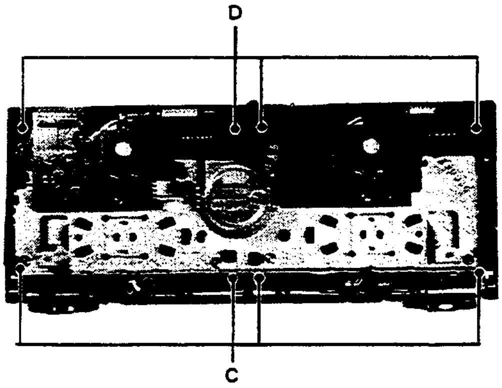
3. Removing the Cassette Mechanism

(1). Remove the 8 screws "C","D" fixing the cassette mechanism.

Reference : The screw "C" is a doublethread screw for plastics.
The screw "D" is a tap tight screw for chassis.

(2). Push the EJECT button, then remove the cassette mechanism assembly.

Note : The cassette mechanism is grounded through the bottom cover, so when checking the operations with the bottom cover removed (especially when checking the signal system), be sure to ground the chassis by using an alligator clip or other suitable gadget. Also, as this cassette mechanism is designed for pack sensing, remember that it cannot be operated without any tape.

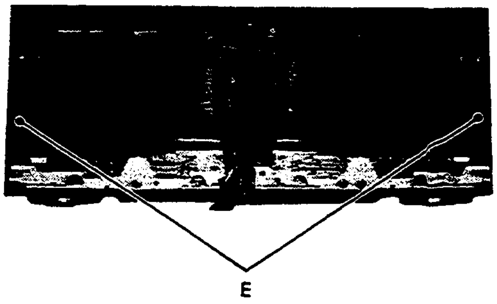


4. Removing the Cassette Holder

(1). Remove the gear oil damper fixing with a double-thread screw "E".

(2). Remove the Holder Spring from the bracket.

(3). Remove the Cassette Holder from the Holder Bracket.

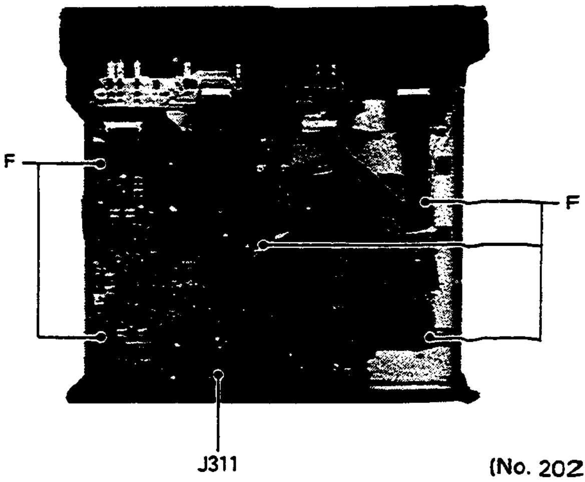


5. Removing the Cassette Deck Main P.C.B

(1). Remove the top cover and front panel.

(2). Remove the 5 screws "F" fixing the Cassette Deck Main P.C.B.

(3). Unsolder the defective connector J311.



(3) Electrical Circuit Adjustments

Make the following adjustments after adjusting the head azimuth.
In principle, the adjustments should be made in the following sequence.
Set the NR switch to OFF and the BEAT CUT switch to "1".
Adjustments marked with an asterisk (*) should always be made after the head is replaced.

Item		Adjustment Method	Adjustment Location	Standard Value	Remarks
Motor speed		1. Play back VTT-712 and connect a frequency counter to the VCR/DAT terminals.	Semi-fixed resistor on the main PC Board		Connect a wow & flutter meter with a built-in frequency counter to the VCR/DAT REC terminal.
		2. Normal-speed adjustment Play back deck B and adjust the semi-fixed resistor VR482.	VR482	3,000 ±10 Hz	Adjust the normal speed first, and perform the high speed adjustment.
		3. High-speed adjustment Play back deck A and adjust the semi-fixed resistor VR481.	VR481	6000 ±10Hz	
* 1	Playback level	Play back VTT-724 (1 kHz) and connect an electronic voltmeter between W491 and W330 for left, or W329 and W330 for right. And then, adjust the semi-fixed resistors.	A deck (L) VR451 (R) VR452 B deck (L) VR281 (R) VR282	400mV	The playback level varies when the head is replaced so should be adjusted. Use an electronic voltmeter with an impedance of 100 kΩ or more.
* 2	Recording bias frequency	Connect a frequency counter between W325 (L), W399(R) and W326(E), and play back a METAL tape.	L331	100 ± 5 kHz	
* 3	HX PRO adjustment	Adjust the L341 for L channel (L342 for R channel) so that the DC voltage becomes minimum at both ends of R271 (R272).	L341(L) L342(R)	90~130mV	
* 4	Recording frequency response	Record 1 kHz/10 kHz with the NR switch off and input 30mV to VCR/DAT terminals. While playing back these recorded signals, adjust the variation of the 10 kHz outputs from the 1kHz output to the standard value using VR341 and VR342. (Basically, adjust so that the 1 kHz and 10 kHz outputs become flat.)	(L)VR341 (R)VR342	0±3 dB for 10 kHz with 1 kHz as the standard.	1) The recording and playback frequencies of a cassette deck are adjusted by adjusting the bias. This is because the frequency response depends more on the bias current than with an open-reel deck. 2) Perform the adjustment with normal tape and confirm that the values are within the range for metal tape.
		Note: After completing the recording level adjustment in item 3, check the recording and play back frequencies with the NR switch on. Fine adjust again if the value is 0±4 dB or more at 1 kHz and 10 kHz.			

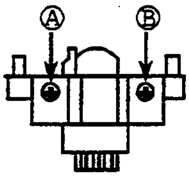
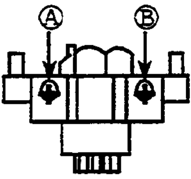
Adjustment Procedures (Cassette Deck)

(1) Measuring instruments for Adjustment

1. Audio frequency signal generator (0dbs output at the 600 ohm output terminal from 50Hz to 20KHz)
2. Attenuator (600 ohm impedance)
3. Electronic voltmeter
4. STANDARD TAPES
   VTT-703L(head azimuth adjustment)
   VTT-712 (tape speed , wow & flutter)
   VTT-724 (Reference level)
5. Recording standard tapes
   AC-513 (CrO2), TS-5 (SF) or equivalent. (Use JVC standard tape)
6. 600-ohm resistor for attenuator matching
7. WOW & FLUTTER meter with frequency counter
8. Distortion meter with band-pass filter
9. Torque gauge : CTG-N (cassette type)
10. C-120 tape (for checking the tape running)

(2) Adjustment and repairing the mechanism

(Adjust and inspect the mechanism before adjusting the electronic circuit)

Item	Adjustment Method	Standard value	Remarks
Adjusting azimuth of rec/play head	1. Connect an electronic voltmeter to the VCR/DAT REC terminal. (about 1 volt output) 2. Play back VTT-703L		1) When the specified characteristic cannot be obtained because of head wear, cut wire, excessive magnetization, etc., replace the head and adjust the head azimuth. Also, perform the adjustment of the playback level, recording bias current, recording level, etc. 2) When there is the difference of more than 3 ~ 4 dB between left and right output levels, replace the head to avoid coomplaints.
A mechanism 	3. Adjust screw Ⓐ so that the output of the voltmeter becomes maximum when PLAY (▶) is pressed.	Maximum	
	4. Adjust screw Ⓑ so that the output of the voltmeter becomes maximum when PLAY (◀) is pressed.	Maximum	
	5. After making the adjustment,apply screw lock to prevent screws Ⓐ and Ⓑ coming loose .		
B mechanism 	6. Adjust screw Ⓐ so that the output of the vltmeter becomes maximum when PLAY (▶) is pressed.	Maximum	
	7. Adjust screw Ⓑ so that the output of the voltmeter becomes maximum when PLAY (◀) is pressed.	Maximum	
	8. After making the adjustment,apply screw lock to prevent screws Ⓐ and Ⓑ coming loose .		
Playback torque	Measure the torque in the playback mode using the torque measurement cassette CTG-N.	26 ~ 62 g-cm	When the standard torque cannot be obtained, replace the FR arm assembly or motor.
Fast forward torque	Measure the torque in the fast forward mode by the above method.	80 ~ 200 g-cm	When the standard torque cannot be obtained, replace the FR arm assembly or motor.
Rewind torque	Measure the torque in the rewind mode by the above method.	80 ~ 200 g-cm	When the standard torque cannot be obtained, replace the FR arm assembly or motor.
Wow & flutter	Play back VTT-712 and connect the wow & flutter meter to the SPK OUT terminals , its reading should be within 0.2% (WRMS).	Less than 0.2%	As a complaint may occur if the wow & flutter fluctuates by 0.1% even though it is allowed in the standard, repairing is required.

PARTS LIST

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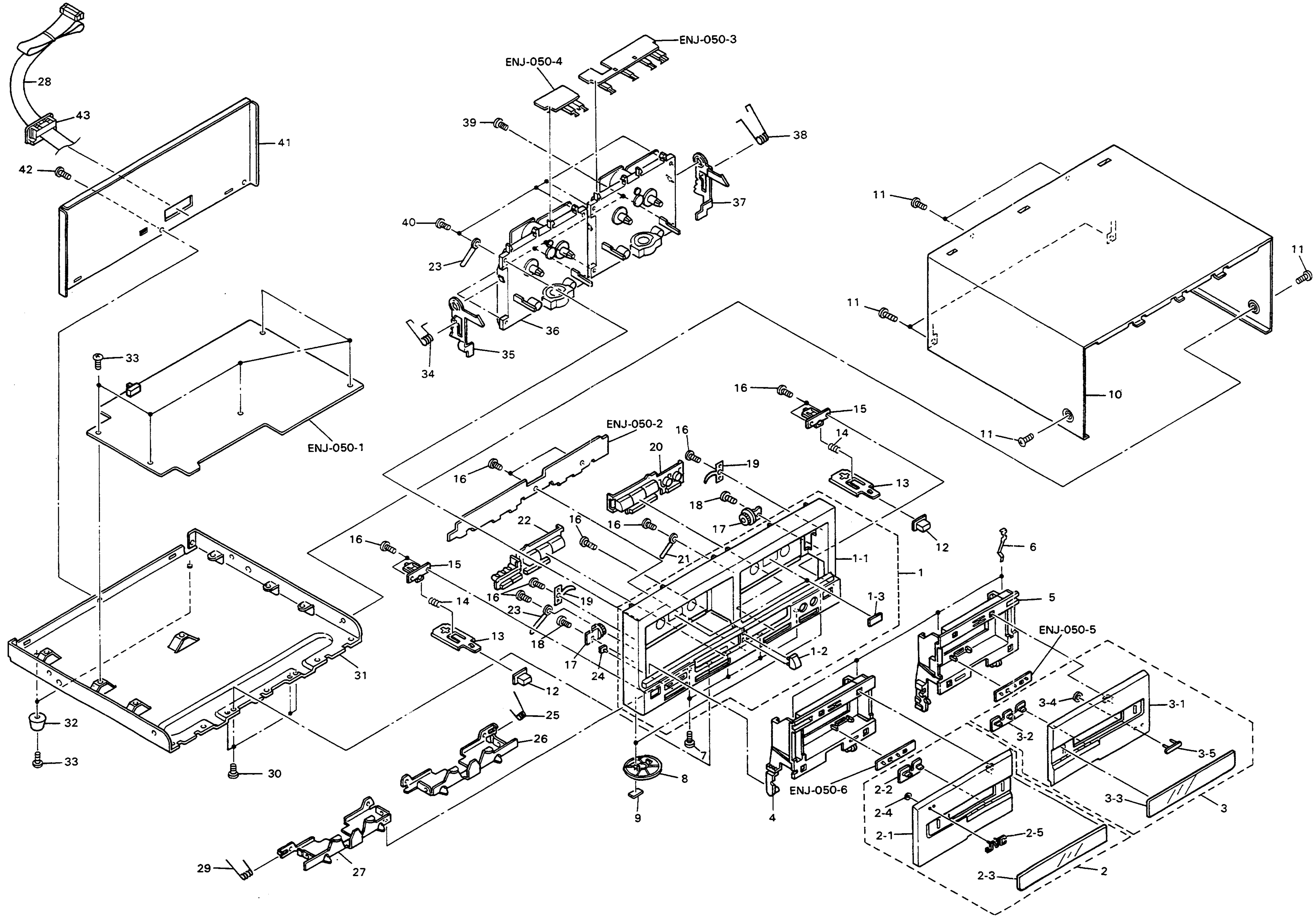
General Exploded View and Parts List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■Parts List

⚠	Item	Part Number	Part Name	Q'ty	Description	Areas
	1	EFP-TDMX90BKE(S	Front Panel Ass'y	1		
	1-1	E102325-007	Front Panel	1		
	1-2	E406110-001	Cap	1		
	1-3	E69777-003	Reflection Plate	2		
	2	E307065-003SA	Cassette Lid Ass'y	1	A	
	2-1	E307065-003	Cassette Lid	1	A	
	2-2	E406100-001	Indicator	1	A	
	2-3	E406193-001	Cassette Window	1	A	
	2-4	E60912-003	Speed Nut	1	A	
	2-5	PQ42561	JVC Mark	1	A	
	3	E307067-004SA	Cassette Lid Ass'y	1	B	
	3-1	E307067-004	Cassette Lid	1	B	
	3-2	E406099-001	Indicator	1	B	
	3-3	E406193-002	Cassette Window	1	B	
	3-4	E60912-003	Speed Nut	1	B	
	3-5	E406347-001	Mark	1	B	
	4	E206813-002	Cassette Holder	1	A	
	5	E206814-002	Cassette Holder	1	B	
	6	E406085-001	Cassette Spring	4		
	7	SDST3006Z	Screw	4		
	8	E306935-001	Foot	2	Front	
	9	E75896-001	Spacer	2	for Front Foot	
	10	E206809-002	Metal Cover	1		
	11	SDSG3008M	Screw	6		
	12	E406097-002	Push Button	2	Eject	
	13	E406103-001	Push Plate	2	Eject	
	14	E406112-001	Spring	2	Eject	
	15	E306938-003	Eject Guide	2	Eject	
	16	SDSF2608Z	Screw	11		
	17	E305654-003	Damper Ass'y	2		
	18	SBSF3008Z	Screw	2	for Damper	
	19	E406251-001	Leaf Spring	2		
	20	E206821-003	Push Button	1	B	
	21	PU49485-4	Wire Clamp	1		
	22	E206811-002	Push Button	1	A	
	23	PU49485-3	Wire Clamp	2		
	24	E406111-001	Indicator	1	B.Skip	
	25	E406276-001	Holder Spring	1	Right	
	26	E306911-002	Holder Bracket	1	Right	
	27	E306910-002	Holder Bracket	1	Left	
	28	EWP902-021	Plug Cord Ass'y	1	JB311 (15Pin)	
	29	E406275-002	Holder Spring	1	Left	
	30	SDST3006M	Screw	4		
	31	E102327-002	Chassis Base	1		
	32	E47227-029	Foot	2	Rear	
	33	SBSG3008N	Screw	7		
	34	E406277-003	Eject Spring	1	Left	
	35	E307099-003	Eject Lever	1	Left	
	36	———	Cassette Mechanism Ass'y	1	See page 2-7	
	37	E307100-004	Eject Lever	1	Right	
	38	E406278-002	Eject Spring	1	Right	
	39	SBST3008C	Screw	4	for Cassette Mechanism	
	40	SBSF3010C	Screw	4	for Cassette Mechanism	
	41	E206823-013	Rear Panel	1		J
		E206823-014	Rear Panel	1		C , U , A
		E206823-015	Rear Panel	1		E , EF , G , GI
		E206823-016	Rear Panel	1		BS
	42	SBSG3008M	Screw	1		
	43	E305920-001	Cord Holder	1		
	—	E61029-009	Number Label	1		

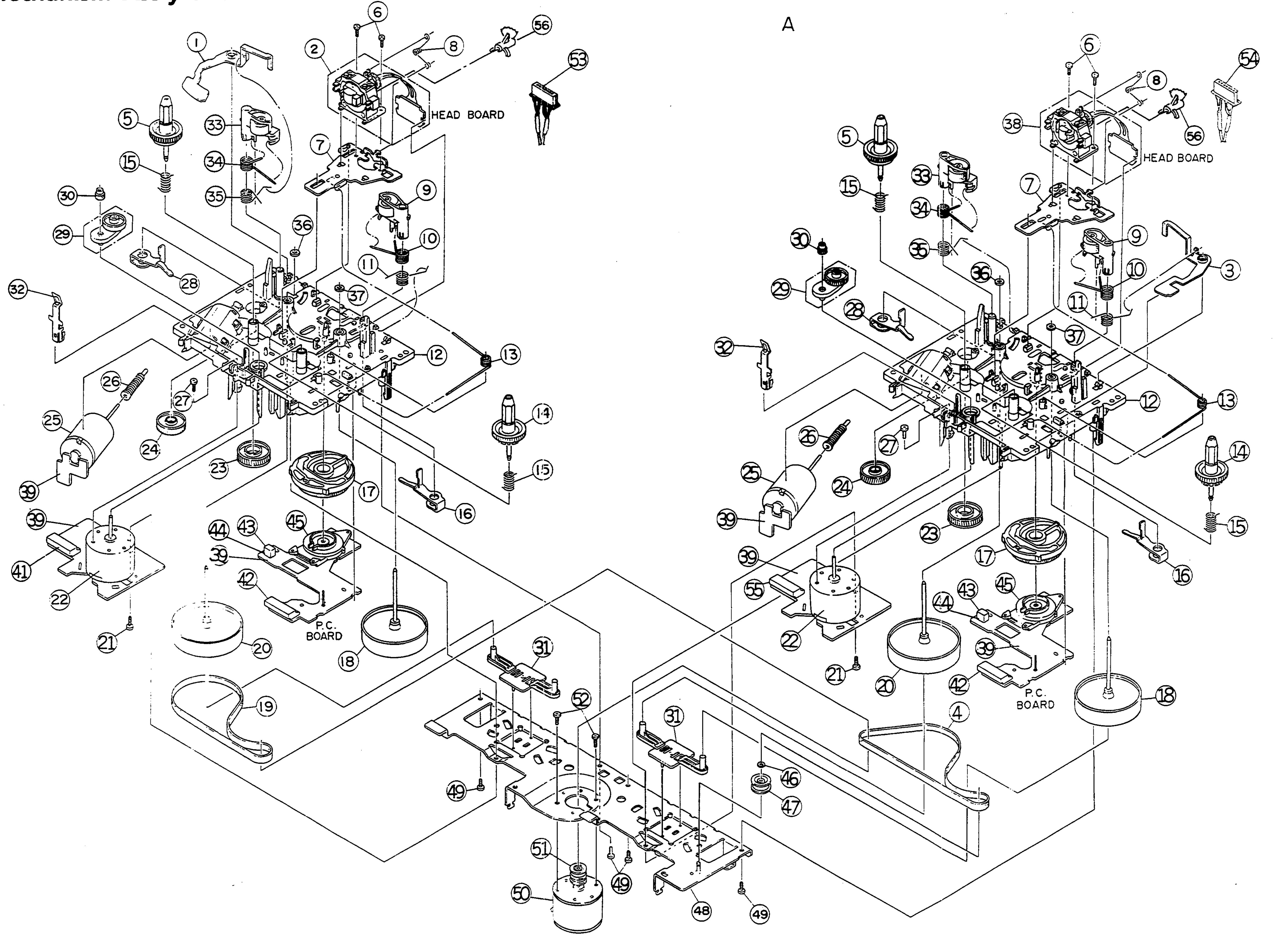
⚠: Safety Parts

The Marks Designated Areas

J··························the U.S.A.
C··························Canada
A··························Australia
G··························Germany
GI·························Italy

BS·······················the U.K.
E , EF··················Continental Europe
U··························Universal Type
No mark indicates all areas.

Cassette Mechanism Ass'y and Parts List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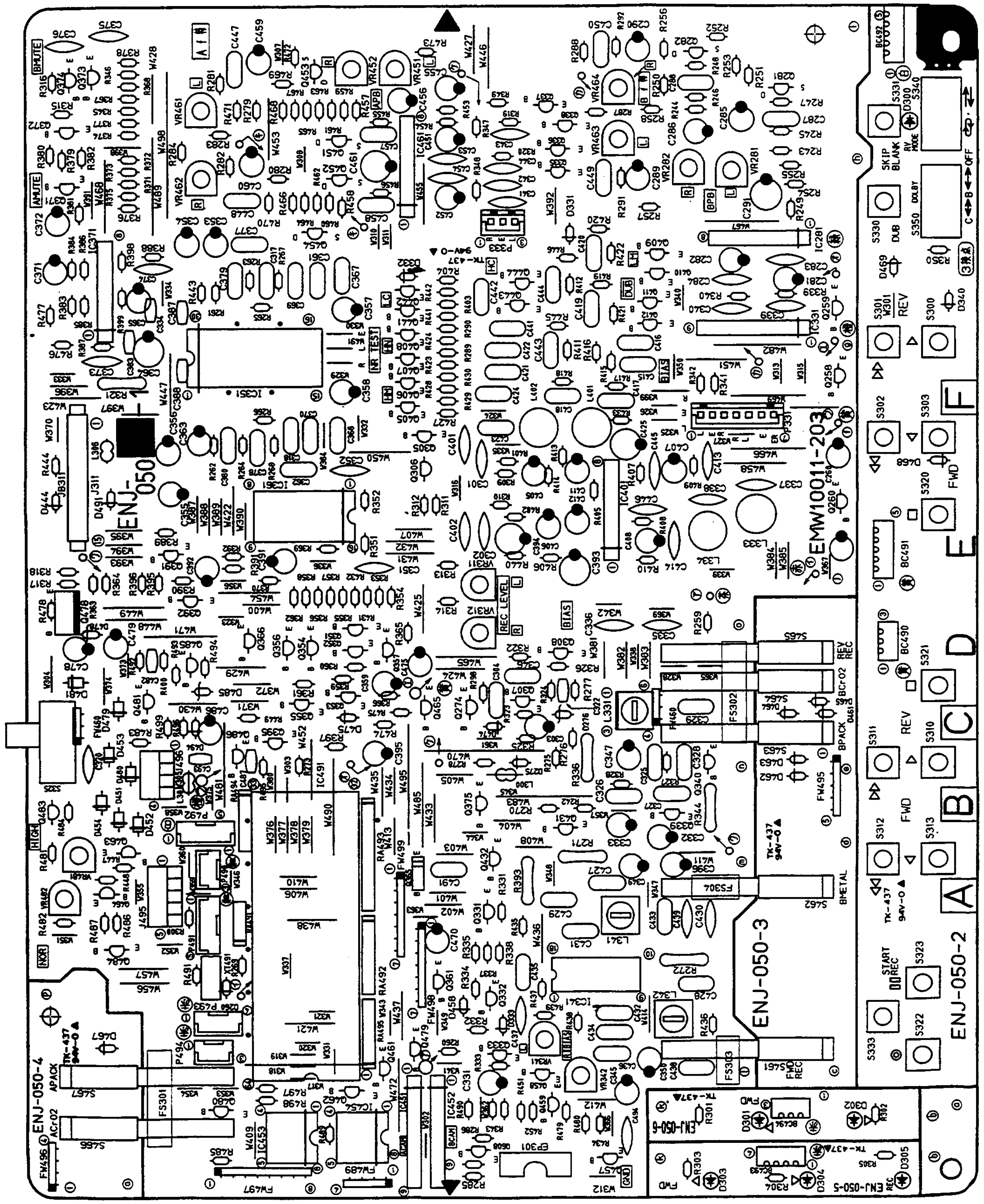
■ Cassette Mechanism Parts List

Item	Part Number	Part Name	Q'ty	Description	Areas
1	VKL6954-002	Eject Safety Lever	1	B Mechanism	
2	VDG5149-002MB1	Head Mount Ass'y	1	B Mechanism	
3	VKL6943-002	Eject Safety Lever	1	A Mechanism	
4	VKB3001-047	Capstan Belt	1	A Mechanism	
5	VKS5321-00A	Reel Ass'y	2	Right	
6	SDST2004Z	Screw	4	for Head Mount Ass'y	
7	VKL6942-00B	Head Base Ass'y	2		
8	VKW4914-001	Head Spring	2		
9	VKP4221-00A	Pinch Roller Ass'y	2	Left	
10	VKW3006-213	Torsion Spring	2	Left	
11	VKW4933-001	Torsion Spring	2	Left	
12	VKS1112-00A	Chassis Base Ass'y	2		
13	VKW4930-002	Return Spring	2		
14	VKS3480-001	Reel Ass'y	2	Left	
15	VKW4928-001	B.T Spring	4	for Reel Ass'y	
16	VKL6940-001	Pinch Roller Lever	2	Left	
17	VKS2209-002	Controller Cam	2		
18	VKF3174-00A	Flywheel Ass'y	2	Left	
19	VKB3001-048	Capstan Belt	1	B Mechanism	
20	VKF3172-00A	Flywheel Ass'y	2	Right	
21	SDSF2608Z	Screw	2		
22	MMN-6F4RA38	D.C Motor	2	Reel	
23	VKS5331-001	Gear (6)	2		
24	VKS5330-001	Gear (5)	2		
25	MXN-13FB12F	D.C Motor	2	Cam	
26	VKS5329-001	Gear (4)	2		
27	SDSP2605Z	Screw	2		
28	VKL6939-001	Pinch Roller Lever	2	Right	
29	VKS5325-00B	FR Arm Ass'y	2		
30	VKS5328-002	Reel Motor Gear	2		
31	VKS5327-002	Thrust Plate	2		
32	VKY4628-001	Pack Spring	2		
33	VKP4219-00A	Pinch Roller Ass'y	2	Right	
34	VKW3006-212	Torsion Spring	2	Right	
35	VKW4932-001	Torsion Spring	2	Right	
36	VKZ4035-009	Washer	2	Right	
37	Q03093-527	Washer	2	Left	
38	VDG5149-002MA1	Head Mount Ass'y	1	A Mechanism	
39	VMW2325-001	Printed Board	2		
41	VMC0107-R08	Connector	1	B Mechanism	
42	VMC0107-R07	Connector	2		
43	DN6851A	Hall IC	2		
44	VKS3487-001	IC Holder	2		
45	VKS3495-00A	Cam Switch Ass'y	2		
46	WDL163525-4	Washer	1		
47	VKR4631-002	Idler Pulley	1		
48	VKM3419-00C	FM Bracket	1		
49	SDSF2605Z	Screw	4		
50	MMI-6H2LWSK	Motor	1	Capstan	
51	VKR4632-001	Motor Pulley	1		
52	SPSP2603Z	Screw	2		
53	VDM007P-040	Head Wire	1	B Mechanism	
54	VDM003P-040	Head Wire	1	A Mechanism	
55	VMC0107-R04	Connector	1	A Mechanism	
56	VKS3485-002	Head Block Gear	2		

Printed Circuit Board Ass'y and Parts List

■ENJ-050 ☐Cassette PC Board Ass'y

Note : ENJ-050 ☐ varies according to the areas employed. See note (1) when placing an order.



Note (1)

PC Board Ass'y	Designated Areas
ENJ-050 D	Canada, the U.S.A.
ENJ-050 E	Australia, the U.K., Continental Europe, Universal Type
ENJ-050 F	Germany, Italy

Transistors

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	Q274	2SD2144S(VW)	SILICON ROHM	
	Q281	2SK301(P,Q)	F.E.T MATSUSHITA	
	Q282	2SK301(P,Q)	F.E.T MATSUSHITA	
	Q305	2SD2144S(VW)	SILICON ROHM	
	Q306	2SD2144S(VW)	SILICON ROHM	
	Q307	2SD2144S(VW)	SILICON ROHM	
	Q308	2SD2144S(VW)	SILICON ROHM	
	Q331	2SC1740S(R,S)	SILICON ROHM	
	Q332	2SC1740S(R,S)	SILICON ROHM	
	Q333	2SC1740S(R,S)	SILICON ROHM	
	Q335	DTC144ES	SILICON ROHM	
	Q336	DTC144ES	SILICON ROHM	
	Q337	DTC144ES	SILICON ROHM	
	Q338	DTC144ES	SILICON ROHM	
	Q339	2SC1685(Q,R)	SILICON MATSUSHITA	
	Q340	2SC1685(Q,R)	SILICON MATSUSHITA	
	Q351	2SC1740S(R,S)	SILICON ROHM	
	Q352	2SC1740S(R,S)	SILICON ROHM	
	Q353	2SC1740S(R,S)	SILICON ROHM	
	Q354	2SC1740S(R,S)	SILICON ROHM	
	Q355	2SC1740S(R,S)	SILICON ROHM	
	Q356	2SC1740S(R,S)	SILICON ROHM	
	Q357	2SC1740S(R,S)	SILICON ROHM	
	Q361	DTC144ES	SILICON ROHM	
	Q365	DTC144EFF	SILICON ROHM	
	Q366	DTC144ES	SILICON ROHM	
	Q371	2SD2144S(VW)	SILICON ROHM	
	Q372	2SD2144S(VW)	SILICON ROHM	
	Q373	2SD2144S(VW)	SILICON ROHM	
	Q374	2SD2144S(VW)	SILICON ROHM	
	Q375	DTC144ES	SILICON ROHM	
	Q391	2SD2144S(VW)	SILICON ROHM	
	Q392	2SD2144S(VW)	SILICON ROHM	
	Q395	DTA144ES	SILICON ROHM	
	Q405	DTC144TS	SILICON ROHM	
	Q406	DTC144TS	SILICON ROHM	
	Q407	DTC144TS	SILICON ROHM	
	Q408	DTC144TS	SILICON ROHM	
	Q409	DTC144TS	SILICON ROHM	
	Q410	DTC144TS	SILICON ROHM	
	Q411	DTC144TS	SILICON ROHM	
	Q412	DTC144TS	SILICON ROHM	
	Q431	2SA933S(R,S)	SILICON ROHM	
	Q432	DTC114WS	SILICON S001	
	Q441	DTC144TS	SILICON ROHM	
	Q442	DTC144TS	SILICON ROHM	
	Q443	DTC144TS	SILICON ROHM	
	Q444	DTC144TS	SILICON ROHM	
	Q451	2SK301(P,Q)	F.E.T MATSUSHITA	
	Q452	2SK301(P,Q)	F.E.T MATSUSHITA	
	Q453	2SK301(P,Q)	F.E.T MATSUSHITA	
	Q454	2SK301(P,Q)	F.E.T MATSUSHITA	
	Q457	DTC144TS	SILICON ROHM	
	Q458	DTC144TS	SILICON ROHM	
	Q459	2SC1740S(R,S)	SILICON ROHM	
	Q460	DTC114WS	SILICON S001	
	Q461	DTC144ES	SILICON ROHM	
	Q462	DTC144ES	SILICON ROHM	
	Q463	2SB544MP(E,F)	SILICON SANYO	
	Q464	2SB544MP(E,F)	SILICON SANYO	
	Q465	DTA114YS	SILICON ROHM	
	Q478	2SD2037(E,F)	SILICON ROHM	
	Q479	DTC114WS	SILICON S001	
	Q480	DTC144ES	SILICON ROHM	
	Q481	DTC114WS	SILICON S001	
	Q483	2SA933S(R,S)	SILICON ROHM	
	Q484	2SA933S(R,S)	SILICON ROHM	
	Q485	DTA114TS	SILICON ROHM	
	Q486	DTC114ES	SILICON ROHM	

△ : SAFETY PARTS

I.C.s

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	IC281	UPC1228HA	I.C. NEC	
	IC331	UPC1330HA	I.C. NEC	
	IC341	UPC1297CA	I.C. NEC	
	IC351	HA12142NT	I.C. HITACHI	
	IC361	BU4053B	I.C. ROHM	
	IC371	BA15218N	I.C. ROHM	
	IC401	BA15218N	I.C. ROHM	
	IC451	BA6218	I.C. ROHM	
	IC452	BA6218	I.C. ROHM	
	IC453	LB1639-CV	I.C. SANYO	
	IC454	LB1639-CV	I.C. SANYO	
	IC461	UPC1228HA	I.C. NEC	
	IC491	HD614081SC43	I.C. HITACHI	

△ : SAFETY PARTS

Diodes

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	D260	1SS133	SILICON ROHM	
	D275	1SS133	SILICON ROHM	
	D276	MTZ4.7JB	ZENER ROHM	
	D300	SLH-34VC3F	L.E.D. ROHM	
	D301	SLH-34MC3F	L.E.D. ROHM	
	D302	SLH-34MC3F	L.E.D. ROHM	
	D303	SLH-34MC3F	L.E.D. ROHM	
	D304	SLH-34MC3F	L.E.D. ROHM	
	D305	SLH-34VC3F	L.E.D. ROHM	
	D331	1SS133	SILICON ROHM	
	D332	1SS133	SILICON ROHM	
	D333	1SS133	SILICON ROHM	
	D340	1SS133	SILICON ROHM	
	D451	1SR139-200	SILICON ROHM	
	D452	1SR139-200	SILICON ROHM	
	D453	1SR139-200	SILICON ROHM	
	D454	1SR139-200	SILICON ROHM	
	D458	1SS133	SILICON ROHM	
	D461	1SS133	SILICON ROHM	
	D462	1SS133	SILICON ROHM	
	D463	1SS133	SILICON ROHM	
	D464	1SS133	SILICON ROHM	
	D465	1SS133	SILICON ROHM	
	D467	1SS133	SILICON ROHM	
	D468	1SS133	SILICON ROHM	
	D469	1SS133	SILICON ROHM	
	D474	1SS133	SILICON ROHM	
	D475	1SS133	SILICON ROHM	
	D478	MTZ6.2JC	ZENER ROHM	
	D479	1SR139-200	SILICON ROHM	
	D480	1SR139-200	SILICON ROHM	
	D481	1SR139-200	SILICON ROHM	
	D485	MTZ3.9JB	ZENER ROHM	
	D491	1SS133	SILICON ROHM	
	D494	1SS133	SILICON ROHM	

△ : SAFETY PARTS

Capacitors

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	C281	QETB1HM-225	2.2MF 50V ELECTRO	
	C282	QETB1HM-225	2.2MF 50V ELECTRO	
	C283	QCS21HJ-101	100PF 50V CERAMIC	
	C284	QCS21HJ-101	100PF 50V CERAMIC	
	C285	QETB1AM-107	100MF 10V ELECTRO	
	C286	QETB1AM-107	100MF 10V ELECTRO	
	C287	QFLB1HJ-822	8200PF 50V MYLAR	
	C288	QFLB1HJ-822	8200PF 50V MYLAR	
	C289	QETB1HM-105	1MF 50V ELECTRO	
	C290	QETB1HM-105	1MF 50V ELECTRO	
	C291	QEK51CM-107	100MF 16V ELECTRO	
	C301	QCY21HK-122	1200PF 50V CERAMIC	
	C302	QCY21HK-122	1200PF 50V CERAMIC	
	C303	QETB1HM-105	1MF 50V ELECTRO	
	C304	QFV81HJ-223	0.022MF 50V T.FILM	
	C317	QFLB1HJ-222	2200PF 50V MYLAR	
	C318	QFLB1HJ-222	2200PF 50V MYLAR	
	C320	QCBB1HK-471	470PF 50V CERAMIC	
	C322	QCGB1HK-102	1000PF 50V CERAMIC	
	C325	QFLB1HJ-222	2200PF 50V MYLAR	
	C326	QFLB1HJ-222	2200PF 50V MYLAR	
	C327	QFLB1HJ-682	6800PF 50V MYLAR	
	C328	QFV81HJ-153	0.015MF 50V T.FILM	
	C329	QFP81HG-562M	5600PF 50V POLY	
	C331	QETB1HM-105	1MF 50V ELECTRO	
	C332	QETB1HM-105	1MF 50V ELECTRO	
	C333	QETB1EM-106	10MF 25V ELECTRO	
	C337	QCS21HJ-101	100PF 50V CERAMIC	
	C338	QCS21HJ-101	100PF 50V CERAMIC	
	C339	QCY21HK-152	1500PF 50V CERAMIC	
	C340	QCY21HK-152	1500PF 50V CERAMIC	
	C341	QCS21HJ-331	330PF 50V CERAMIC	
	C342	QCS21HJ-331	330PF 50V CERAMIC	
	C343	QCY21HK-122	1200PF 50V CERAMIC	
	C344	QCY21HK-122	1200PF 50V CERAMIC	

△ : SAFETY PARTS

Capacitors

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	C345	QETB1AM-107	100MF 10V ELECTRO	
	C346	QFV81HJ-223	0.022MF 50V T.FILM	
	C347	QETB1CM-107	100MF 16V ELECTRO	
	C349	QETB1EM-106	10MF 25V ELECTRO	
	C350	QETB1EM-106	10MF 25V ELECTRO	
	C351	QCF21HP-473	0.047MF 50V CERAMIC	
	C352	QCF21HP-473	0.047MF 50V CERAMIC	
	C353	QETB1HM-105	1MF 50V ELECTRO	
	C354	QETB1HM-105	1MF 50V ELECTRO	
	C355	QETB1HM-105	1MF 50V ELECTRO	
	C356	QETB1HM-105	1MF 50V ELECTRO	
	C357	QETB1EM-106	10MF 25V ELECTRO	
	C358	QETB1EM-106	10MF 25V ELECTRO	
	C359	QETB1EM-106	10MF 25V ELECTRO	
	C361	QFV81HJ-104	0.1MF 50V T.FILM	
	C362	QFV81HJ-104	0.1MF 50V T.FILM	
	C363	QETB1HM-105	1MF 50V ELECTRO	
	C364	QETB1CM-107	100MF 16V ELECTRO	
	C365	QETB1AM-107	100MF 10V ELECTRO	
	C367	QFV81HJ-104	0.1MF 50V T.FILM	
	C368	QFV81HJ-104	0.1MF 50V T.FILM	
	C369	QFLB1HJ-222	2200PF 50V MYLAR	
	C370	QFLB1HJ-222	2200PF 50V MYLAR	
	C371	QETB1HM-105	1MF 50V ELECTRO	
	C372	QETB1HM-105	1MF 50V ELECTRO	
	C373	QCS21HJ-220	22PF 50V CERAMIC	
	C374	QCS21HJ-220	22PF 50V CERAMIC	
	C375	QCF21HP-473	0.047MF 50V CERAMIC	
	C376	QCF21HP-473	0.047MF 50V CERAMIC	
	C377	QFLB1HJ-222	2200PF 50V MYLAR	
	C378	QFLB1HJ-222	2200PF 50V MYLAR	
	C379	QFLB1HJ-272	2700PF 50V MYLAR	
	C380	QFLB1HJ-272	2700PF 50V MYLAR	
	C381	QCF21HP-473	0.047MF 50V CERAMIC	E
	C381	QCF21HP-473	0.047MF 50V CERAMIC	F
	C383	QCGB1HK-102	1000PF 50V CERAMIC	
	C384	QCGB1HK-102	1000PF 50V CERAMIC	
	C387	QCBB1HK-471	470PF 50V CERAMIC	
	C388	QCBB1HK-471	470PF 50V CERAMIC	
	C391	QEKS1EM-106	10MF 25V ELECTRO	
	C392	QEKS1EM-106	10MF 25V ELECTRO	
	C393	QETB1CM-107	100MF 16V ELECTRO	
	C394	QETB1CM-107	100MF 16V ELECTRO	
	C395	QETB1AM-476	47MF 10V ELECTRO	
	C396	QETB1CM-476	47MF 16V ELECTRO	
	C401	QCF21HP-473	0.047MF 50V CERAMIC	
	C402	QCF21HP-473	0.047MF 50V CERAMIC	
	C405	QETB1HM-225	2.2MF 50V ELECTRO	
	C406	QETB1HM-225	2.2MF 50V ELECTRO	
	C407	QETB1HM-225	2.2MF 50V ELECTRO	
	C408	QETB1HM-225	2.2MF 50V ELECTRO	
	C411	QETB1EM-106	10MF 25V ELECTRO	
	C412	QETB1EM-106	10MF 25V ELECTRO	
	C413	QCS21HJ-271	270PF 50V CERAMIC	
	C414	QCS21HJ-271	270PF 50V CERAMIC	
	C415	QFLB1HJ-682	6800PF 50V MYLAR	
	C416	QFLB1HJ-682	6800PF 50V MYLAR	
	C417	QFLB1HJ-562	5600PF 50V MYLAR	
	C418	QFLB1HJ-562	5600PF 50V MYLAR	
	C419	QFV81HJ-123	0.012MF 50V T.FILM	
	C420	QFV81HJ-123	0.012MF 50V T.FILM	
	C421	QFLB1HJ-272	2700PF 50V MYLAR	
	C422	QFLB1HJ-272	2700PF 50V MYLAR	
	C423	QFV81HJ-183	0.018MF 50V T.FILM	
	C424	QFV81HJ-183	0.018MF 50V T.FILM	
	C425	QETB1CM-107	100MF 16V ELECTRO	
	C427	QFP81HG-821M	820PF 50V POLY	
	C428	QFP81HG-821M	820PF 50V POLY	
	C429	QCS21HJ-101	100PF 50V CERAMIC	
	C430	QCS21HJ-101	100PF 50V CERAMIC	
	C431	QFV81HJ-333	0.033MF 50V T.FILM	
	C432	QFV81HJ-333	0.033MF 50V T.FILM	
	C433	QFV81HJ-223	0.022MF 50V T.FILM	
	C434	QFV81HJ-223	0.022MF 50V T.FILM	
	C435	QFV81HJ-103	0.01MF 50V T.FILM	
	C436	QFV81HJ-103	0.01MF 50V T.FILM	
	C437	QCF21HP-102	1000PF 50V CERAMIC	
	C438	QCF21HP-102	1000PF 50V CERAMIC	
	C439	QCS21HJ-100	10PF 50V CERAMIC	
	C441	QFV81HJ-103	0.01MF 50V T.FILM	
	C442	QFV81HJ-103	0.01MF 50V T.FILM	
	C443	QFV81HJ-123	0.012MF 50V T.FILM	
	C444	QFV81HJ-123	0.012MF 50V T.FILM	
	C445	QCS21HJ-470	47PF 50V CERAMIC	
	C446	QCS21HJ-470	47PF 50V CERAMIC	
	C447	QFV81HJ-153	0.015MF 50V T.FILM	
	C448	QFV81HJ-153	0.015MF 50V T.FILM	
	C449	QFV81HJ-153	0.015MF 50V T.FILM	
	C450	QFV81HJ-153	0.015MF 50V T.FILM	
	C451	QETB1HM-225	2.2MF 50V ELECTRO	
	C452	QETB1HM-225	2.2MF 50V ELECTRO	
	C453	QCS21HJ-101	100PF 50V CERAMIC	
	C454	QCS21HJ-101	100PF 50V CERAMIC	
	C455	QETB1AM-107	100MF 10V ELECTRO	
	C456	QETB1AM-107	100MF 10V ELECTRO	

△ : SAFETY PARTS

Capacitors

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	C457	QFLB1HJ-822	8200PF 50V MYLAR	
	C458	QFLB1HJ-822	8200PF 50V MYLAR	
	C459	QETB1HM-105	1MF 50V ELECTRO	
	C460	QETB1HM-105	1MF 50V ELECTRO	
	C461	QETB1CM-107	100MF 16V ELECTRO	
	C475	QETB1AM-476	47MF 10V ELECTRO	
	C478	QETB1EM-106	10MF 25V ELECTRO	
	C479	QETB1AM-476	47MF 10V ELECTRO	
	C482	QCVB1CM-103	0.01MF 16V CERAMIC	
	C486	QETB1EM-106	10MF 25V ELECTRO	
	C487	QCVB1CM-103	0.01MF 16V CERAMIC	
	C491	QCZ0202-155	1.5MF 25V CERAMIC	
	C493	QCVB1CM-103	0.01MF 16V CERAMIC	
	C494	QCF21HP-103	0.01MF 50V CERAMIC	

△ : SAFETY PARTS

Resistors

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	R242	QRD167J-222	2.2K 1/6W CARBON	
	R243	QRD167J-470	47 1/6W CARBON	
	R244	QRD167J-470	47 1/6W CARBON	
	R245	QRD167J-334	330K 1/6W CARBON	
	R246	QRD167J-334	330K 1/6W CARBON	
	R247	QRD167J-682	6.8K 1/6W CARBON	
	R248	QRD167J-682	6.8K 1/6W CARBON	
	R249	QRD167J-822	8.2K 1/6W CARBON	
	R250	QRD167J-822	8.2K 1/6W CARBON	
	R251	QRD167J-105	1M 1/6W CARBON	
	R252	QRD167J-105	1M 1/6W CARBON	
	R253	QRD167J-472	4.7K 1/6W CARBON	
	R254	QRD167J-471	470 1/6W CARBON	
	R255	QRD167J-272	2.7K 1/6W CARBON	
	R256	QRD167J-272	2.7K 1/6W CARBON	
	R257	QRD167J-102	1K 1/6W CARBON	
	R258	QRD167J-102	1K 1/6W CARBON	
	R260	QRD167J-102	1K 1/6W CARBON	
	R261	QRD167J-242	2.4K 1/6W CARBON	
	R262	QRD167J-242	2.4K 1/6W CARBON	
	R263	QRD167J-562	5.6K 1/6W CARBON	
	R264	QRD167J-562	5.6K 1/6W CARBON	
	R265	QRD167J-223	22K 1/6W CARBON	
	R266	QRD167J-223	22K 1/6W CARBON	
	R267	QRD167J-561	560 1/6W CARBON	
	R268	QRD167J-561	560 1/6W CARBON	
	R269	QRD167J-103	10K 1/6W CARBON	
	R270	QRD167J-103	10K 1/6W CARBON	
△	R271	QRD14CJ-100S	10 1/4W UNF.CARBON	
△	R272	QRD14CJ-100S	10 1/4W UNF.CARBON	
	R273	QRD167J-222	2.2K 1/6W CARBON	
	R275	QRD167J-224	220K 1/6W CARBON	
	R276	QRD167J-102	1K 1/6W CARBON	
	R277	QRD167J-392	3.9K 1/6W CARBON	
	R278	QRD167J-472	4.7K 1/6W CARBON	
	R279	QRD167J-102	1K 1/6W CARBON	
	R280	QRD167J-102	1K 1/6W CARBON	
	R281	QRD167J-223	22K 1/6W CARBON	
	R282	QRD167J-223	22K 1/6W CARBON	
	R283	QRD167J-102	1K 1/6W CARBON	
	R284	QRD167J-102	1K 1/6W CARBON	
	R285	QRD167J-103	10K 1/6W CARBON	
	R286	QRD167J-103	10K 1/6W CARBON	
	R287	QRD167J-102	1K 1/6W CARBON	
	R288	QRD167J-102	1K 1/6W CARBON	
	R291	QRD167J-103	10K 1/6W CARBON	
	R292	QRD167J-103	10K 1/6W CARBON	
	R298	QRD167J-124	120K 1/6W CARBON	
	R300	QRD167J-391	390 1/6W CARBON	
	R301	QRD167J-271	270 1/6W CARBON	
	R302	QRD167J-271	270 1/6W CARBON	
	R303	QRD167J-271	270 1/6W CARBON	
	R304	QRD167J-271	270 1/6W CARBON	
	R305	QRD167J-561	560 1/6W CARBON	
	R309	QRD167J-473	47K 1/6W CARBON	
	R310	QRD167J-473	47K 1/6W CARBON	
	R311	QRD167J-103	10K 1/6W CARBON	
	R312	QRD167J-103	10K 1/6W CARBON	
	R313	QRD167J-153	15K 1/6W CARBON	
	R314	QRD167J-153	15K 1/6W CARBON	
	R315	QRD167J-103	10K 1/6W CARBON	
	R316	QRD167J-103	10K 1/6W CARBON	
	R317	QRD167J-223	22K 1/6W CARBON	
	R318	QRD167J-223	22K 1/6W CARBON	
	R319	QRD167J-823	82K 1/6W CARBON	
	R320	QRD167J-823	82K 1/6W CARBON	
△	R321	QRZ0077-220	22 1/4W FUSIBLE	
	R322	QRD167J-124	120K 1/6W CARBON	
	R323	QRD167J-475	4.7M 1/6W CARBON	
	R324	QRD167J-103	10K 1/6W CARBON	
	R325	QRD167J-104	100K 1/6W CARBON	
	R326	QRD167J-475	4.7M 1/6W CARBON	
	R327	QRD167J-563	56K 1/6W CARBON	
	R328	QRD167J-563	56K 1/6W CARBON	
	R331	QRD167J-332	3.3K 1/6W CARBON	

△ : SAFETY PARTS

Resistors

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	R332	QRD167J-332	3.3K 1/6W CARBON	
	R333	QRD167J-104	100K 1/6W CARBON	
	R334	QRD167J-621	620 1/6W CARBON	
	R335	QRD167J-821	820 1/6W CARBON	
△	R336	QRZ0077-100	10 1/4W FUSIBLE	
	R337	QRD167J-471	470 1/6W CARBON	
	R338	QRD167J-561	560 1/6W CARBON	
	R339	QRD167J-563	56K 1/6W CARBON	
	R340	QRD167J-563	56K 1/6W CARBON	
	R341	QRD167J-100	10 1/6W CARBON	
	R342	QRD167J-100	10 1/6W CARBON	
	R343	QRD167J-222	2.2K 1/6W CARBON	
△	R344	QRD14CJ-6R8S	6.8 1/4W UNF.CARBON	
	R345	QRD167J-562	5.6K 1/6W CARBON	
	R346	QRD167J-562	5.6K 1/6W CARBON	
	R347	QRD167J-224	220K 1/6W CARBON	
	R348	QRD167J-224	220K 1/6W CARBON	
	R349	QRD167J-223	22K 1/6W CARBON	
	R350	QRD167J-103	10K 1/6W CARBON	
	R351	QRD167J-104	100K 1/6W CARBON	
	R352	QRD167J-104	100K 1/6W CARBON	
	R353	QRD167J-153	15K 1/6W CARBON	
	R354	QRD167J-153	15K 1/6W CARBON	
	R355	QRD167J-273	27K 1/6W CARBON	
	R356	QRD167J-273	27K 1/6W CARBON	
	R357	QRD167J-332	3.3K 1/6W CARBON	
	R358	QRD167J-332	3.3K 1/6W CARBON	
	R359	QRD167J-223	22K 1/6W CARBON	
	R360	QRD167J-223	22K 1/6W CARBON	
	R361	QRD167J-561	560 1/6W CARBON	
	R362	QRD167J-561	560 1/6W CARBON	
	R363	QRD167J-472	4.7K 1/6W CARBON	
	R364	QRD167J-472	4.7K 1/6W CARBON	
	R365	QRD167J-103	10K 1/6W CARBON	
	R366	QRD167J-105	1M 1/6W CARBON	
	R367	QRD167J-223	22K 1/6W CARBON	
	R368	QRD167J-223	22K 1/6W CARBON	
	R369	QRD167J-103	10K 1/6W CARBON	
	R370	QRD167J-103	10K 1/6W CARBON	
	R371	QRD167J-562	5.6K 1/6W CARBON	
	R372	QRD167J-562	5.6K 1/6W CARBON	
	R373	QRD167J-103	10K 1/6W CARBON	
	R374	QRD167J-103	10K 1/6W CARBON	
	R375	QRD167J-223	22K 1/6W CARBON	
	R376	QRD167J-223	22K 1/6W CARBON	
	R377	QRD167J-103	10K 1/6W CARBON	
	R378	QRD167J-103	10K 1/6W CARBON	
	R379	QRD167J-103	10K 1/6W CARBON	
	R380	QRD167J-103	10K 1/6W CARBON	
	R381	QRD167J-102	1K 1/6W CARBON	
	R382	QRD167J-102	1K 1/6W CARBON	
	R383	QRD167J-104	100K 1/6W CARBON	
	R384	QRD167J-104	100K 1/6W CARBON	
	R385	QRD167J-123	12K 1/6W CARBON	
	R386	QRD167J-123	12K 1/6W CARBON	
	R387	QRD167J-104	100K 1/6W CARBON	
	R388	QRD167J-104	100K 1/6W CARBON	
	R389	QRD167J-221	220 1/6W CARBON	
	R390	QRD167J-221	220 1/6W CARBON	
	R391	QRD167J-562	5.6K 1/6W CARBON	
	R392	QRD167J-562	5.6K 1/6W CARBON	
△	R393	QRZ0077-100	10 1/4W FUSIBLE	
	R395	QRD167J-103	10K 1/6W CARBON	
	R396	QRD167J-103	10K 1/6W CARBON	
	R397	QRD167J-102	1K 1/6W CARBON	
	R398	QRD167J-223	22K 1/6W CARBON	
	R399	QRD167J-223	22K 1/6W CARBON	
	R400	QRD167J-103	10K 1/6W CARBON	
	R401	QRD167J-333	33K 1/6W CARBON	
	R402	QRD167J-333	33K 1/6W CARBON	
	R403	QRD167J-472	4.7K 1/6W CARBON	
	R404	QRD167J-472	4.7K 1/6W CARBON	
	R405	QRD167J-683	68K 1/6W CARBON	
	R406	QRD167J-683	68K 1/6W CARBON	
	R407	QRD167J-153	15K 1/6W CARBON	
	R408	QRD167J-153	15K 1/6W CARBON	
	R409	QRD167J-153	15K 1/6W CARBON	
	R410	QRD167J-153	15K 1/6W CARBON	
	R411	QRD167J-222	2.2K 1/6W CARBON	
	R412	QRD167J-222	2.2K 1/6W CARBON	
	R413	QRD167J-182	1.8K 1/6W CARBON	
	R414	QRD167J-182	1.8K 1/6W CARBON	
	R415	QRD167J-511	510 1/6W CARBON	
	R416	QRD167J-511	510 1/6W CARBON	
	R417	QRD167J-301	300 1/6W CARBON	
	R418	QRD167J-301	300 1/6W CARBON	
	R419	QRD167J-332	3.3K 1/6W CARBON	
	R420	QRD167J-332	3.3K 1/6W CARBON	
	R421	QRD167J-242	2.4K 1/6W CARBON	
	R422	QRD167J-242	2.4K 1/6W CARBON	
	R423	QRD167J-122	1.2K 1/6W CARBON	
	R424	QRD167J-122	1.2K 1/6W CARBON	
	R427	QRD167J-151	150 1/6W CARBON	
	R428	QRD167J-151	150 1/6W CARBON	
	R429	QRD167J-152	1.5K 1/6W CARBON	

△ : SAFETY PARTS

Resistors

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	R430	QRD167J-152	1.5K 1/6W CARBON	
	R431	QRD167J-394	390K 1/6W CARBON	
	R432	QRD167J-394	390K 1/6W CARBON	
	R433	QRD167J-221	220 1/6W CARBON	
	R434	QRD167J-392	3.9K 1/6W CARBON	
	R435	QRD167J-154	150K 1/6W CARBON	
	R436	QRD167J-154	150K 1/6W CARBON	
	R437	QRD167J-183	18K 1/6W CARBON	
	R438	QRD167J-183	18K 1/6W CARBON	
	R440	QRD167J-221	220 1/6W CARBON	
	R441	QRD167J-681	680 1/6W CARBON	
	R442	QRD167J-681	680 1/6W CARBON	
	R443	QRD167J-183	18K 1/6W CARBON	
	R444	QRD167J-221	220 1/6W CARBON	
	R445	QRD167J-221	220 1/6W CARBON	
	R446	QRD167J-221	220 1/6W CARBON	
	R447	QRD167J-103	10K 1/6W CARBON	
	R448	QRD167J-103	10K 1/6W CARBON	
	R449	QRD167J-103	10K 1/6W CARBON	
	R451	QRD167J-822	8.2K 1/6W CARBON	
	R452	QRD167J-512	5.1K 1/6W CARBON	
	R453	QRD167J-470	47 1/6W CARBON	
	R454	QRD167J-470	47 1/6W CARBON	
	R455	QRD167J-334	330K 1/6W CARBON	
	R456	QRD167J-334	330K 1/6W CARBON	
	R457	QRD167J-432	4.3K 1/6W CARBON	
	R458	QRD167J-432	4.3K 1/6W CARBON	
	R459	QRD167J-392	3.9K 1/6W CARBON	
	R460	QRD167J-392	3.9K 1/6W CARBON	
	R461	QRD167J-682	6.8K 1/6W CARBON	
	R462	QRD167J-682	6.8K 1/6W CARBON	
	R463	QRD167J-752	7.5K 1/6W CARBON	
	R464	QRD167J-752	7.5K 1/6W CARBON	
	R465	QRD167J-223	22K 1/6W CARBON	
	R466	QRD167J-223	22K 1/6W CARBON	
	R467	QRD167J-105	1M 1/6W CARBON	
	R468	QRD167J-105	1M 1/6W CARBON	
	R469	QRD167J-105	1M 1/6W CARBON	
	R470	QRD167J-105	1M 1/6W CARBON	
	R471	QRD167J-471	470 1/6W CARBON	
	R472	QRD167J-472	4.7K 1/6W CARBON	
	R473	QRD167J-472	4.7K 1/6W CARBON	
	R474	QRD167J-274	270K 1/6W CARBON	
	R475	QRD167J-104	100K 1/6W CARBON	
	R476	QRD167J-224	220K 1/6W CARBON	
	R477	QRD167J-224	220K 1/6W CARBON	
	R478	QRD167J-102	1K 1/6W CARBON	
	R479	QRD167J-562	5.6K 1/6W CARBON	
	R480	QRD167J-392	3.9K 1/6W CARBON	
	R481	QRD167J-183	18K 1/6W CARBON	
	R482	QRD167J-153	15K 1/6W CARBON	
	R483	QRD167J-224	220K 1/6W CARBON	
	R484	QRD167J-224	220K 1/6W CARBON	
	R485	QRD167J-683	68K 1/6W CARBON	
	R486	QRD167J-224	220K 1/6W CARBON	
	R487	QRD167J-224	220K 1/6W CARBON	
	R489	QRD167J-103	10K 1/6W CARBON	
	R490	QRD167J-103	10K 1/6W CARBON	
	R491	QRD167J-105	1M 1/6W CARBON	
	R492	QRD167J-153	15K 1/6W CARBON	
	R493	QRD167J-102	1K 1/6W CARBON	
	R494	QRD167J-222	2.2K 1/6W CARBON	
	R495	QRD167J-103	10K 1/6W CARBON	
	R496	QRD167J-103	10K 1/6W CARBON	
	R497	QRD167J-102	1K 1/6W CARBON	
	R498	QRD167J-102	1K 1/6W CARBON	
	R499	QRD167J-472	4.7K 1/6W CARBON	
	R500	QRD167J-223	22K 1/6W CARBON	
	RA491	QRB049J-103	10K 1/10W R.NETWORK	
	RA492	QRB089J-103	10K 1/10W R.NETWORK	
	RA495	QRB079J-103	10K 1/10W R.NETWORK	
	VR281	QVPA601-201A	200 VARIABLE	
	VR282	QVPA601-201A	200 VARIABLE	
	VR311	QVPA601-503A	50K VARIABLE	
	VR312	QVPA601-503A	50K VARIABLE	
	VR341	QVPA601-203A	20K VARIABLE	
	VR342	QVPA601-203A	20K VARIABLE	
	VR451	QVPA601-201A	200 VARIABLE	
	VR452	QVPA601-201A	200 VARIABLE	
	VR461	QVPA601-103A	10K VARIABLE	
	VR462	QVPA601-103A	10K VARIABLE	
	VR463	QVPA601-103A	10K VARIABLE	
	VR464	QVPA601-103A	10K VARIABLE	
	VR481	QVPA601-203A	20K VARIABLE	
	VR482	QVPA601-103A	10K VARIABLE	

△ : SAFETY PARTS

Others

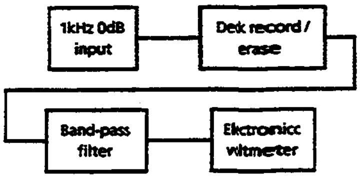
△	ITEM	PART NUMBER	DESCRIPTION	AREA
		EMW10011-204	CIRCUIT BOARD	
	J311	EMV7130-015	CONNECTOR(15PIN)	
	J495	EMV7122-005	CONNECTOR(5PIN)	
	J496	EMV7122-004	CONNECTOR(4PIN)	
	K306	ENZ8101-007	INDUCTOR	E
	K306	ENZ8101-007	INDUCTOR	F
	K309	ENZ8101-007	INDUCTOR	E
	K309	ENZ8101-007	INDUCTOR	F
	L300	EQL4004-101	INDUCTOR	E
	L300	EQL4004-101	INDUCTOR	F
	L301	EQL4004-101	INDUCTOR	E
	L301	EQL4004-101	INDUCTOR	F
	L306	EQL4004-100	INDUCTOR	
	L331	ENZ6002-011	OSCILLATOR COIL	
	L333	EQL2106-223	INDUCTOR	
	L334	EQL2106-223	INDUCTOR	
	L341	ENZ2500-001	SPACER	
	L342	ENZ2500-001	SPACER	
	L401	EQL2106-562	INDUCTOR	
	L402	EQL2106-562	INDUCTOR	
	P331	QMV5011-007K	PLUG ASSY(7PIN)	
	P333	QMV5011-003K	PLUG ASSY(3PIN)	
	P490	EMV5109-003A	PLUG ASSY(3PIN)	
	P491	EMV5109-005A	PLUG ASSY(5PIN)	
	P492	EMV5109-005A	PLUG ASSY(5PIN)	
	P493	EMV5109-004A	PLUG ASSY(4PIN)	
	P494	EMV5109-003A	PLUG ASSY(3PIN)	
	S300	ESP0001-018	TACT SWITCH(A REV PLAY)	
	S301	ESP0001-018	TACT SWITCH(A REW)	
	S302	ESP0001-018	TACT SWITCH(A F.FWD)	
	S303	ESP0001-018	TACT SWITCH(A FWD PLAY)	
	S310	ESP0001-018	TACT SWITCH(B REV PLAY)	
	S311	ESP0001-018	TACT SWITCH(B REW)	
	S312	ESP0001-018	TACT SWITCH(B F.FWD)	
	S313	ESP0001-018	TACT SWITCH(B FWD PLAY)	
	S320	ESP0001-018	TACT SWITCH(A STOP)	
	S321	ESP0001-018	TACT SWITCH(B STOP)	
	S322	ESP0001-018	TACT SWITCH(B REC)	
	S323	ESP0001-018	TACT SWITCH(B PAUSE)	
	S325	QSS6A12-E01	SLIDE SWITCH(BEAT CUT)	

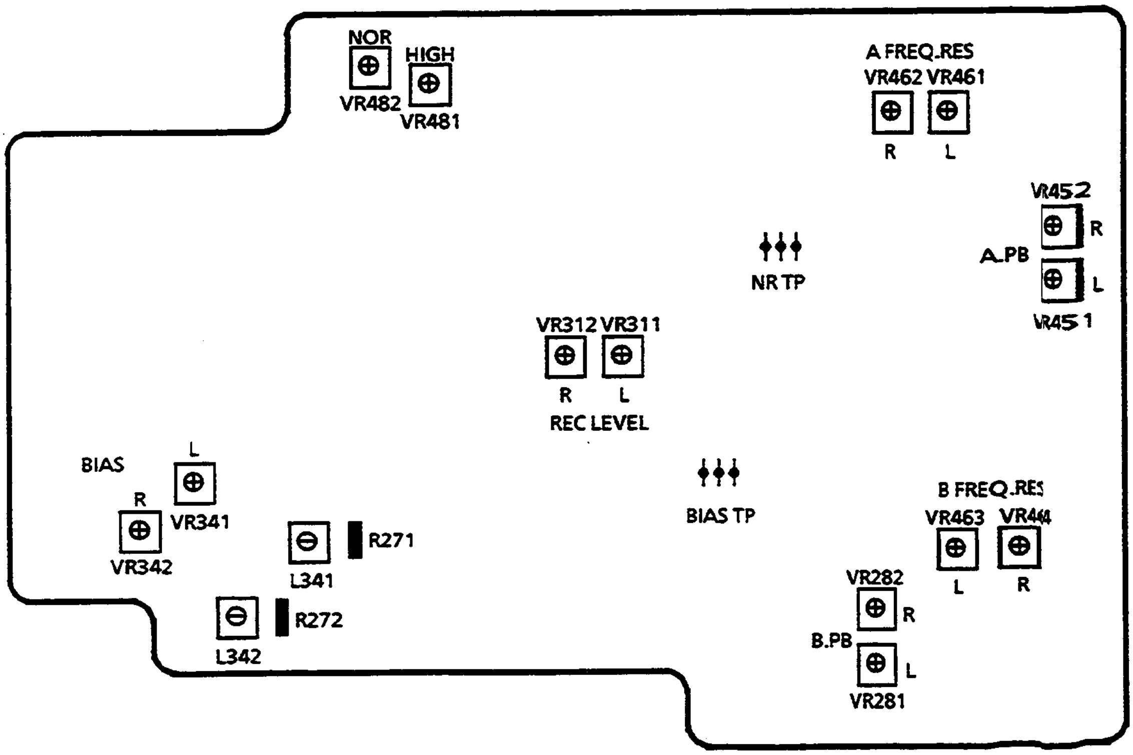
△ : SAFETY PARTS

Others

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	S330	ESP0001-018	TACT SWITCH(H.DUBBING)	
	S331	ESP0001-018	TACT SWITCH(BLANK SKIP)	
	S333	ESP0001-018	TACT SWITCH(CD DIRECT)	
	S340	QSS1A12-E02	SLIDE SWITCH(REV MODE)	
	S350	QSS1A13-E03	SLIDE SWITCH(DOLBY B C NR)	
	S461	ESB1100-003	LEAF SWITCH(FWD REC)	
	S462	ESB1100-003	LEAF SWITCH(B METAL)	
	S463	ESB1100-003	LEAF SWITCH(B PACK)	
	S464	ESB1100-003	LEAF SWITCH(B CrO_2)	
	S465	ESB1100-003	LEAF SWITCH(REV REC)	
	S466	ESB1100-003	LEAF SWITCH(A CrO_2)	
	S467	ESB1100-003	LEAF SWITCH(A PACK)	
	BC490	EWS253-A108	SOCKET WIRE(3PIN)	
	BC491	EWS255-A108	SOCKET WIRE(5PIN)	
	BC492	EWS255-A209	SOCKET WIRE(5PIN)	
	BC493	EWS254-A009	SOCKET WIRE(4PIN)	
	BC494	EWS253-A009	SOCKET WIRE(3PIN)	
	EP301	E70859-001	EARTH PLATE	
	FS301	EX0020005N10S	SPACER	
	FS302	EX0020005N10S	SPACER	
	FS303	EX0010005N10S	SPACER	
	FS304	EX0010005N10S	SPACER	
	FW460	EWR33B-25SST	FLAT WIRE(3PIN)	
	FW489	EWR34B-25LST	FLAT WIRE(4PIN)	
	FW495	EWR35B-30LST	FLAT WIRE(5PIN)	
	FW496	EWR34B-25LST	FLAT WIRE(4PIN)	
	FW497	EWR38B-35LST	FLAT WIRE(8PIN)	
	FW498	EWR37B-20LST	FLAT WIRE(7PIN)	
	FW499	EWR37B-25LST	FLAT WIRE(7PIN)	
	JB311	EWP902-021	PLUG CORD ASSY(15PIN)	
	XT491	ECX0004-194KM	RESONATOR	

△ : SAFETY PARTS

	Item	Adjustment Method	Adjustment Location	Standard Value	Remarks
* 5	Recording Level	1) Input a 1 kHz (300mV) to VCR/ DAT terminals and record on the left and right channels . 2) Connect an electronic voltmeter between L and E of NR TR for left, or R and E for right. And then, adjust the semi - fixed resistors when playing back.	(L)VR311 (R)VR312	300mV	Adjust with normal tape and make sure that the level difference is 1.5 dB or less with metal tape and that the left/right level difference is 1.0 dB or less.
* 6	Recording/ playback distortion	1) Input a 1 kHz (300mV) to VCR / DAT terminals and record it. 2) Play it back and check the out-put with a distortion meter to make sure it is the rated value.		less than 2%	Perform after the bias current and recording level adjustments.
7	Recording/ playback S/N ratio	1) Input a 1 kHz (300mV) to VCR / DAT terminals and record it. While recording, remove the input and record without a signal. 2) Play back and use an electronic voltmeter to compare the 0 dB recording output and the out-put of the recording without a signal to make sure this is the rated value.		more than 45 dB	
8	Erase ratio check	1) Input a 1 kHz (950mV) to VCR/DAT terminals and record it. 2) Rewind and erase part of the recorded section. 3) Compare the outputs of the recorded and erased sections using an electronic voltmeter.		more than 55 dB	Connect a 1 kHz band-pass filter between the deck and electronic Voltmeter When making the adjustment.
					 1kHz 0dB input Deck record / erase Band-pass filter Electronicc voltmeter
9	Auto-stop check	When playing back and recording, make sure to operate AUTO STOP.			


NOR
HIGH
VR482
VR481
A FREQ.RES
VR462 VR461
R
L
VR452
R
A.PB
L
VR451
NR TP
VR312 VR311
R
L
REC LEVEL
BIAS
L
R
VR341
VR342
L341
R271
L342
R272
BIAS TP
B FREQ.RES
VR463 VR444
L
R
VR282
R
B.PB
L
VR281

JVC

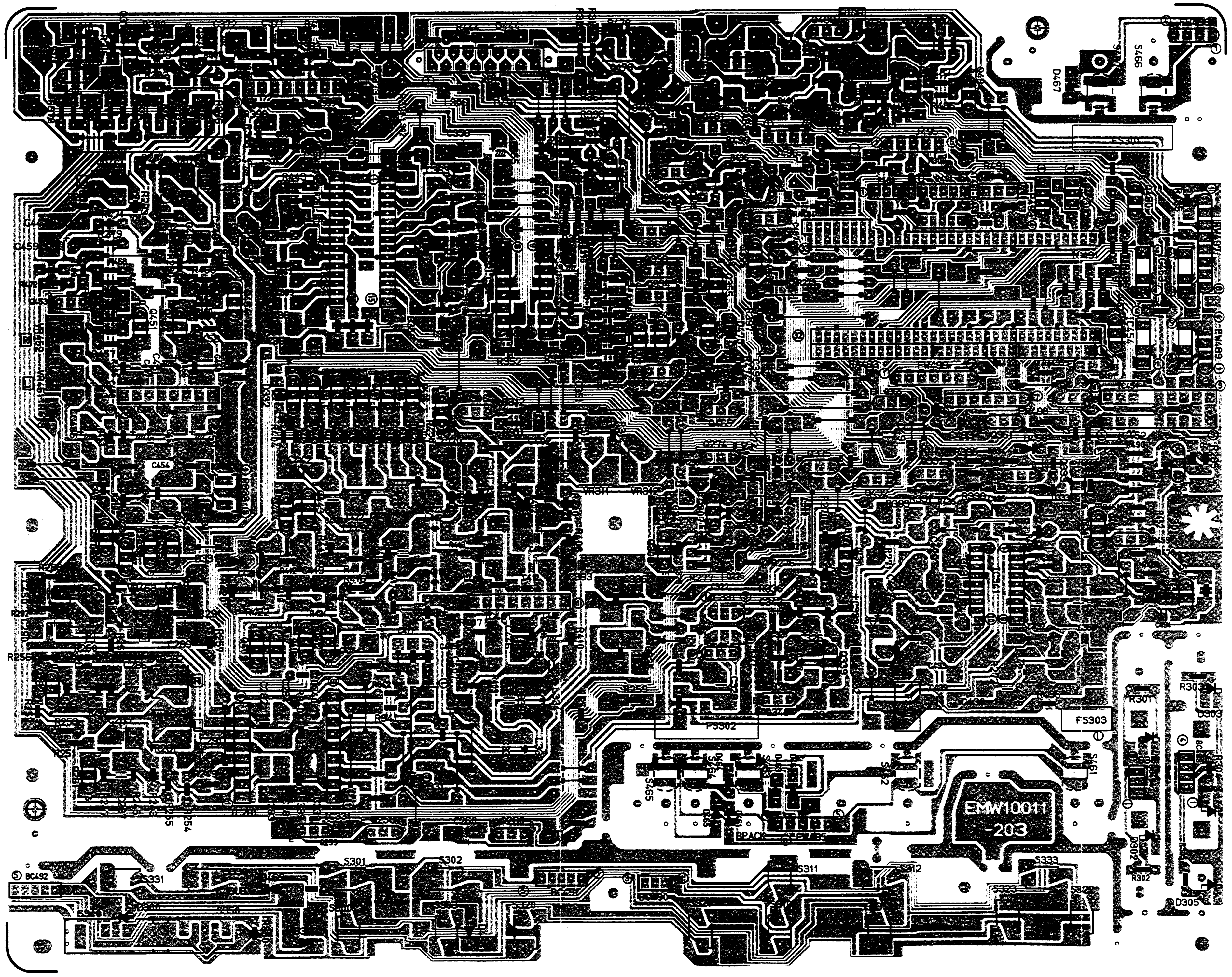
VICTOR COMPANY OF JAPAN, LIMITED
AUDIO PRODUCTS DIVISION, 1644, SHIMOTSURUMA, YAMATO-SHI, KANAGAWA-KEN, 242, JAPAN

(No. 20270)

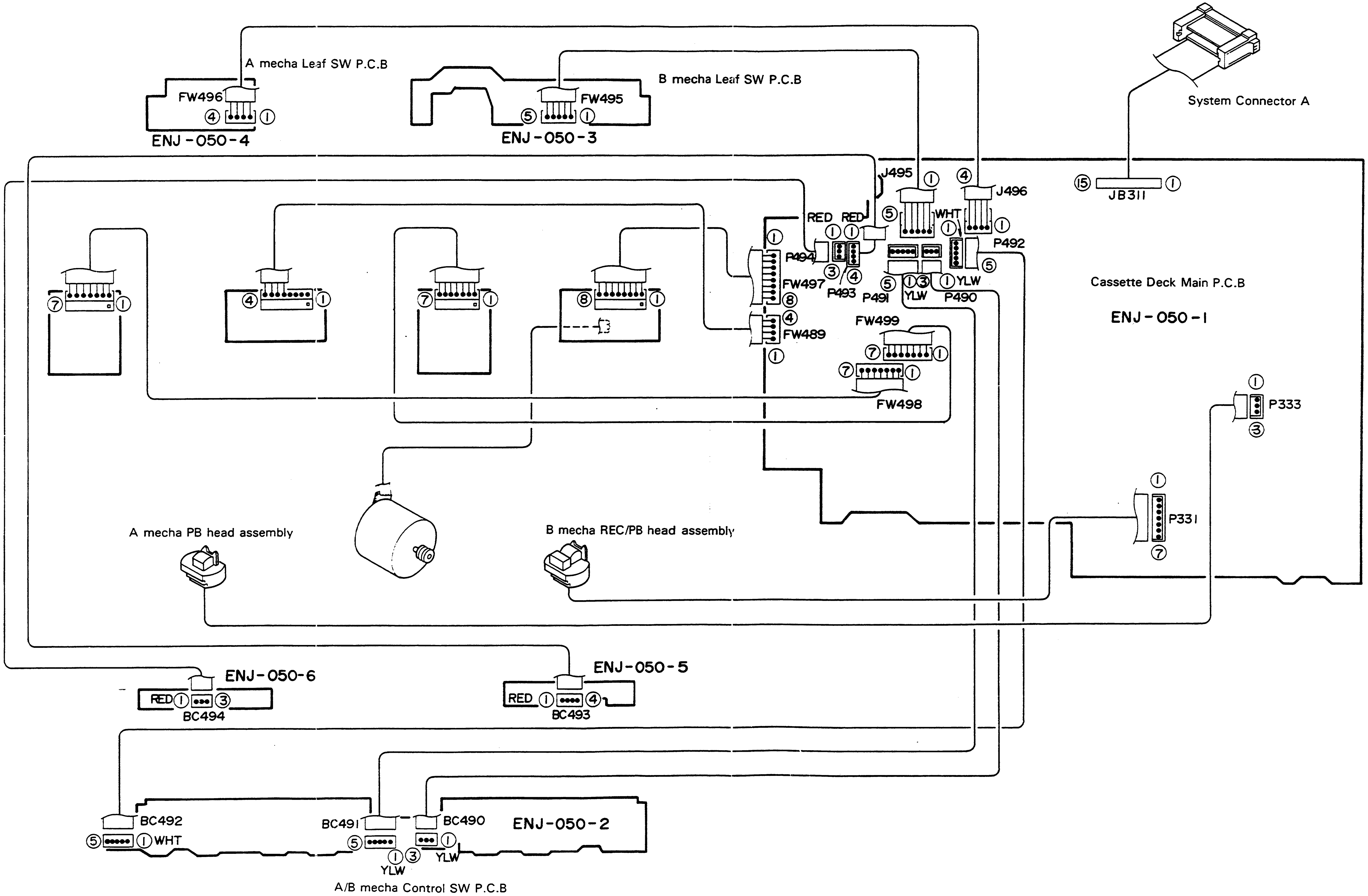
Printed in Japan
9106[O]

Printed Circuit Board

■ **Cassette and P.C.B. (ENJ-050)**

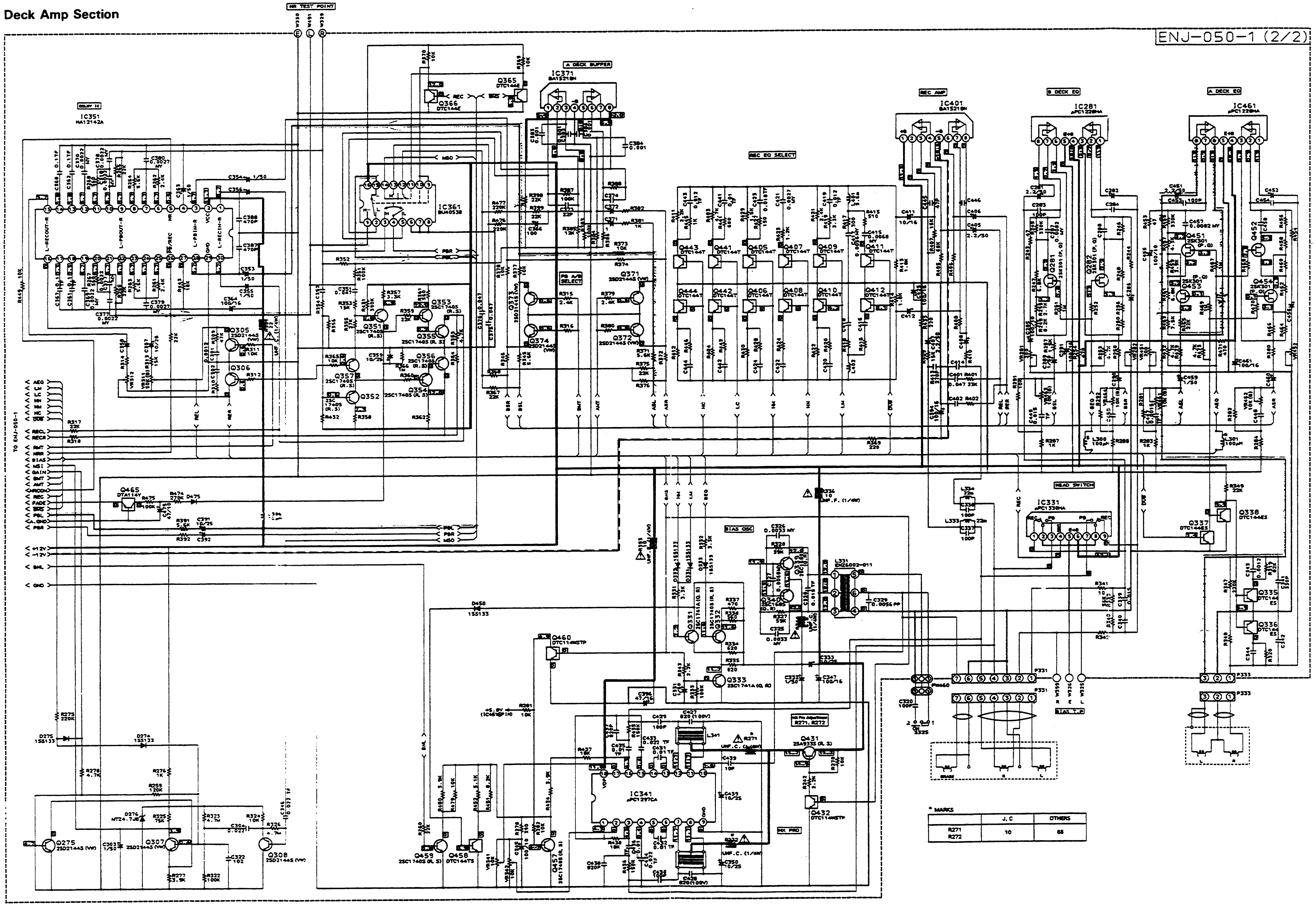

S456
D467
FS303
FS302
R301
R303
D303
R302
D305
EMW10011
-203
S301
S302
S311
S312
S333
S331
S461
S465
BC492
C459
C454
IC454
D302

Connection Diagram


A mecha Leaf SW P.C.B
FW496
④ ①
ENJ-050-4
FW495
⑤ ①
ENJ-050-3
B mecha Leaf SW P.C.B
System Connector A
⑮ ①
JB311
J495
①
④
J496
⑤
WHT
①
①
P492
⑤
RED RED
① ①
①
P494
FW497
⑧
③ ④
P493
⑤
P491
① ③
YLW
① YLW
P490
④
FW489
①
FW499
⑦ ①
⑦ ①
FW498
⑦ ①
④ ①
⑦ ①
⑧ ①
Cassette Deck Main P.C.B
ENJ-050-1
①
P333
③
①
P331
⑦
A mecha PB head assembly
B mecha REC/PB head assembly
ENJ-050-6
RED ① ③
BC494
ENJ-050-5
RED ① ④
BC493
BC492
⑤ ① WHT
BC491
⑤
① ③
YLW
BC490
①
YLW
ENJ-050-2
A/B mecha Control SW P.C.B

Schematic Diagram

■ Cassette Deck Amp Section

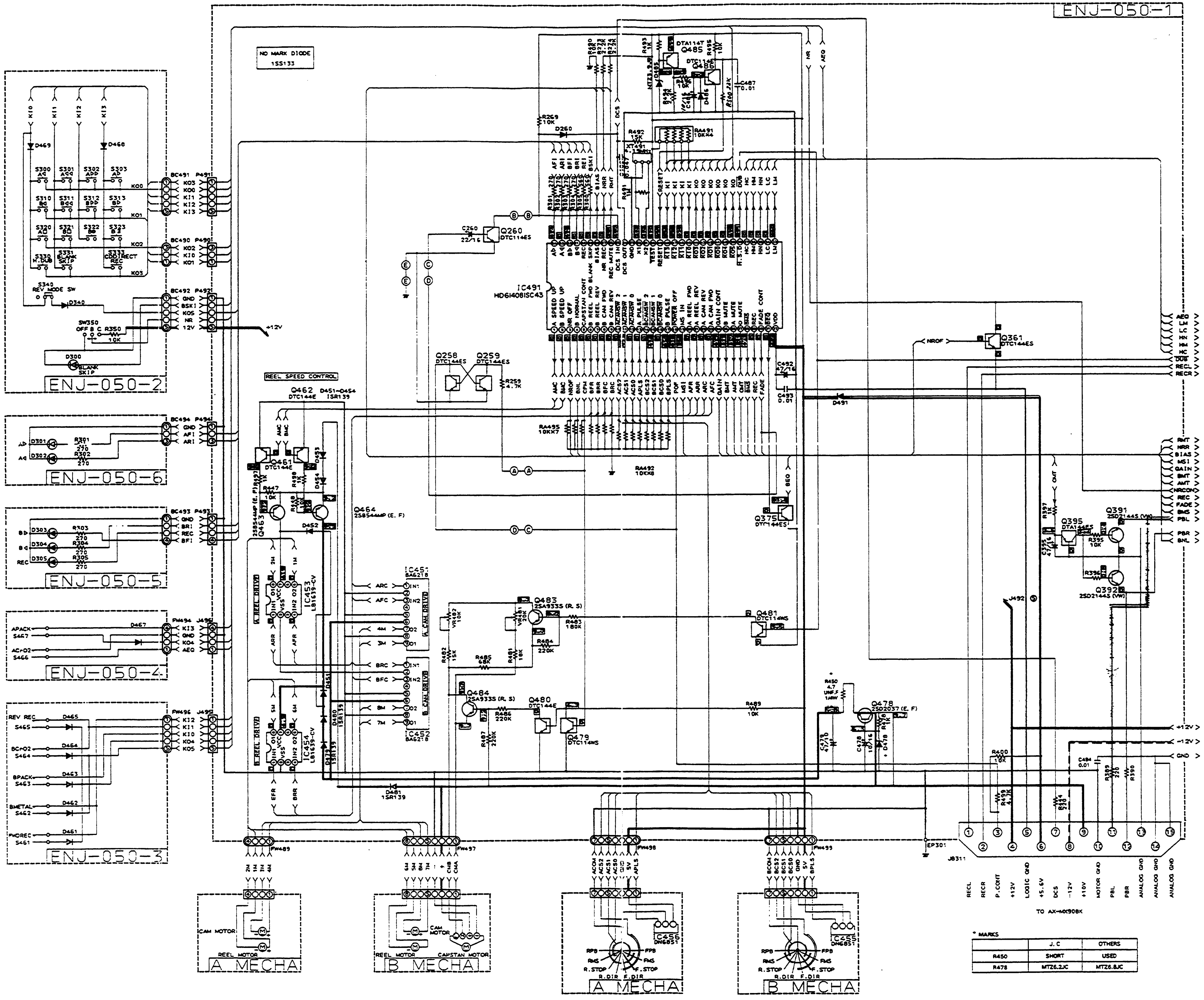

MR TEST POINT
ENJ-050-1 (2/2)
DOLBY IC
IC351 HA12142A
A DECK BUFFER
IC371 BA15218N
IC361 BU4053B
REC EQ SELECT
REC AMP
IC401 BA15218N
B DECK EQ
IC281 μPC1228HA
A DECK EQ
IC461 μPC1228HA
PB A/B SELECT
HEAD SWITCH
IC331 μPC1330HA
BIAS OSC
L331 EXZ6002-011
IC341 μPC1297CA
MIX PRO
TO ENJ-050-1
Q365 DTC144E
Q366 DTC144E
Q305 2SD2144S
Q306
Q351 2SC1740S
Q352
Q353 2SC1740S
Q354 2SC1740S
Q355
Q356
Q357
Q371 2SD2144S
Q372 2SD2144S
Q373
Q374 2SD2144S
Q465 DTA114Y
Q275 2SD2144S
Q307 2SD2144S
Q308 2SD2144S
Q460 DTC114WSTP
Q459 2SC1740S
Q458 DTC144TS
Q457 2SC1740S
Q331 2SC1741A
Q332 2SC1740S
Q333 2SC1741A
Q431 2SA933S
Q432 DTC114WSTP
Q335
Q336
Q337 DTC144ES
Q338 DTC144ES
Q281
Q282
Q451 2SK301
Q452
Q453
Q454 2SK301
P331
P333
BIAS T.P.

* MARKS	J.C	OTHERS
R271 R272	10	68

Notes:

1. ▭ shows DC voltage to the chassis with no signal input.
2. ─── indicates +B power supply.
3. - - - indicates −B power supply.
4. ═ indicates signal path.
5. When replacing the parts in the darkened area (▨) and those marked with ⚠, be sure to use the designated parts to ensure safety.
6. This is the standard circuit diagram. The design and contents are subject to change without notice.

■ Deck Control Section


ENJ-050-1
NO MARK DIODE 1SS133
ENJ-050-2
ENJ-050-6
ENJ-050-5
ENJ-050-4
ENJ-050-3
IC491 HD614081SC43
REEL SPEED CONTROL
Q462 DTC144E
D451~D454 1SR139
Q461 DTC144E
Q463
Q464 2SB544MP (E, F)
IC451 BA6218
IC452 BA6218
IC453 LB1639-CV
IC454 LB1639-CV
A REEL DRIVE
B REEL DRIVE
A CAM DRIVE
B CAM DRIVE
Q258 DTC144ES
Q259 DTC144ES
Q260 DTC114ES
Q361 DTC144ES
Q375 DTC144ES
Q391 2SD2144S (VW)
Q392 2SD2144S (VW)
Q395 DTA144ES
Q480 DTC144E
Q481 DTC114ES
Q479 DTC114ES
Q483 2SA933S (R, S)
Q484 2SA933S (R, S)
Q478 2SD2037 (E, F)
Q485 DTA114T
Q486 DTC114E
S340 REV MODE SW
SW350 OFF B C
D300 BLANK SKIP
CAM MOTOR
REEL MOTOR
CAPSTAN MOTOR
A MECHA
B MECHA
C455 DN6851
C456 DN6851
R.STOP
F.STOP
R.DIR
F.DIR
J8311
RECL
RECR
P.CONT
+12V
LOGIC GND
+5.6V
DCS
-12V
+10V
MOTOR GND
PBL
PBR
ANALOG GND
ANALOG GND
ANALOG GND
TO AX-MX90BK

* MARKS

	J.C	OTHERS
R450	SHORT	USED
R478	MTZ6.2JC	MTZ6.8JC

Notes:

1. ☐ shows DC voltage to the chassis with no signal input.
2. —— indicates +B power supply.
3. --- indicates −B power supply.
4. ▭ indicates signal path.
5. When replacing the parts in the darkened area (▭) and those marked with ⚠, be sure to use the designated parts to ensure safety.
6. This is the standard circuit diagram.
   The design and contents are subject to change without notice.

Original

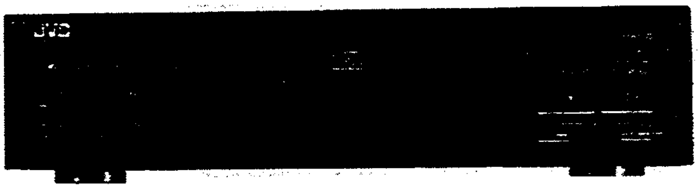
JVC

SERVICE MANUAL

COMPACT COMPONENT SYSTEM

DX-MX90BK/CA-MX90BK

(UNIT No. XL-MX90BK)



* For instruction manual, please refer to the CA-MX90BK (S.M. No. 20267) or DX-MX90BK (S.M. No. 20268).
* AX-MX90BK is needed (for power supply etc.) when servicing.

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Replacement of Laser Pickup 1-13
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Adjustment Procedures 1-15
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Block Diagram 1-23
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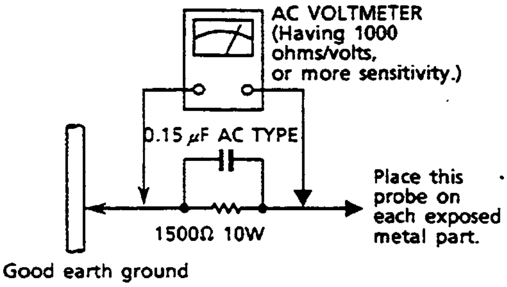
Printed Circuit Board .... Insertion
Parts List .... Insertion

No. 20272
June 1991

Safety Precautions

1. The design of this product contains special hardware and many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Services should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the product should not be made. Any design alterations of the product should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacture of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the Parts List of Service Manual. Electrical components having such features are identified by shading on the schematics and by (⚠) on the Parts List in the Service Manual. The use of a substitute repalcement which does not have the same safety characteristics as the recommended replacement parts shown in the Parts List of Service Manual may create shock, fire, or other hazards.
4. The leads in the products are routed and dressed with ties, clamps, tubings, barriers and the like to be separated from live parts, high temperature parts, moving parts and/or sharp edges for the prevention of electric shock and fire hazard. When service is required, the original lead routing and dress should be observed, and it should be confirmed that they have been returned to normal, after re-assembling.
5. Leakage currnet check (Electrical shock hazard testing)
   After re-assembling the product, always perform an isolation check on the exposed metal parts of the product (antenna terminals, knobs, metal cabinet, screw heads, headphone jack, contorl shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.
   Do not use a line isolation transformer during this check.
   - Plug the AC line cord directly into the AC outlet. Using a "Leakage Current Tester", measure the leakage current from each exposed metal parts of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground. Any leakage current must not exceed 0.5mA AC (r.m.s.).
   - Alternate check method
     Plug the AC line cord directly into the AC outlet. Use an AC voltmeter having, 1,000 ohms per volt or more sensitivity in the following manner. Connect a 1,500Ω 10 W resistor paralleled by a 0.15 μF AC-type capacitor between an exposed metal part and a known good earth ground.
     Measure the AC voltage across the resistor with the AC voltmeter.
     Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and meausre the AC voltage across the resistor.
     Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75 V AC (r.m.s.).
     This corresponds to 0.5 mA AC (r.m.s.).


AC VOLTMETER
(Having 1000 ohms/volts, or more sensitivity.)
0.15 μF AC TYPE
1500Ω 10W
Place this probe on each exposed metal part.
Good earth ground

Warning

1. This equipment has been designed and manufactured to meet international safety standards.
2. It is the legal responsibility of the repairer to ensure that these safety standards are maintained.
3. Repairs must be made in accordance with the relevant safety standards.
4. It is essential that safety critical components are replaced by approved parts.
5. If mains voltage selector is provided, check setting for local voltage.

Important for Laser Products

1. CLASS 1 LASER PRODUCT
2. DANGER : Invisible laser radiation when open and interlock failed or defeated. Avoid direct exposure to beam.
3. CAUTION : There are no serviceable parts inside the Laser Unit. Do not disassemble the Laser Unit. Replace the complete Laser Unit if it malfunctions.
4. CAUTION : The compact disc player uses invisible laser radiation and is equipped with safety switches which prevent emission of radiation when the drawer is open and the safety interlocks have failed or are defeated. It is dangerous to defeat the safety switches.
5. CAUTION : If safety switches malfunction. the laser is able to function.
6. CAUTION : Use of controls, adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
7. CAUTION : The compact disc player provides a laser diode of wavelength 780-790nm and optical output power typical 3mW at the laser diode.

VARNING : Osynlig laserstrålning når denna del år öppnad och spårren år urkopplad. Betrakta ej strålen.

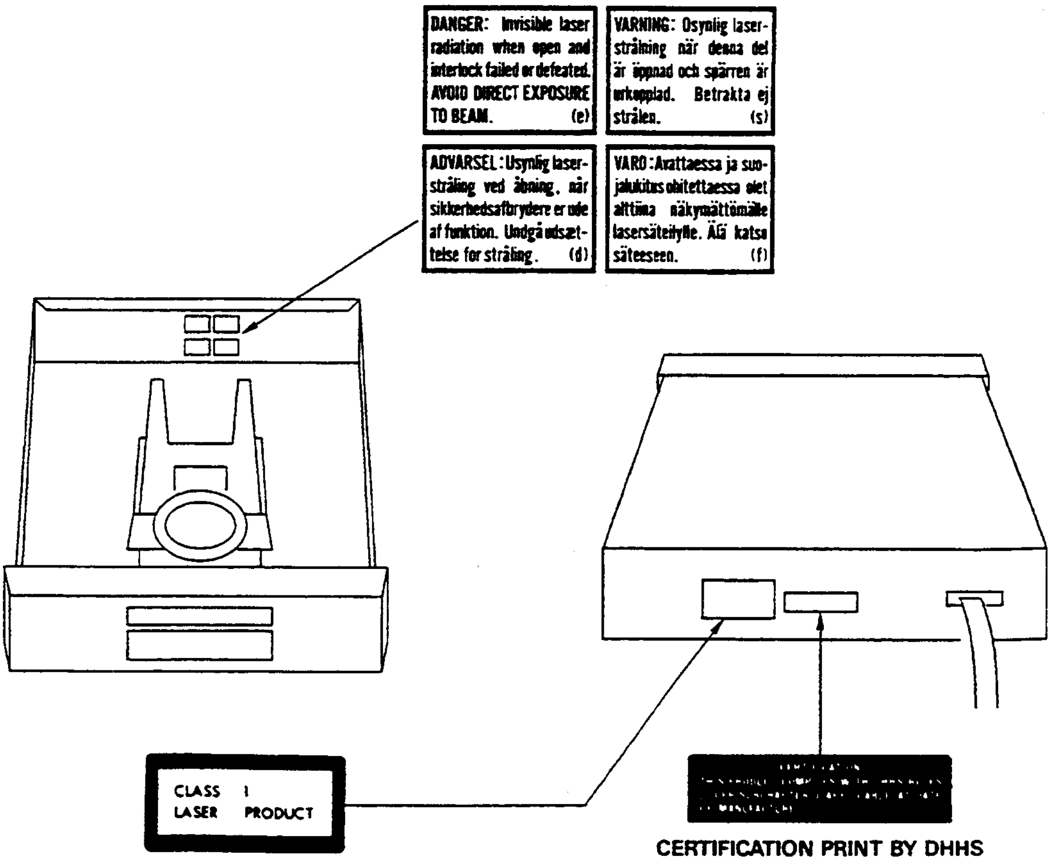
VARO : Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.

ADVARSEL : Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

ADVARSEL : Usynlig laserstråling ved åpning, når sikkerhetsbryteren er avslott. unngå utsettelse for stråling.

REPRODUCTION AND POSITION OF LABELS

WARNING LABEL
(Except for the U.S.A.)



DANGER: Invisible laser radiation when open and interlock failed or defeated. AVOID DIRECT EXPOSURE TO BEAM. (e)

VARNING: Osynlig laserstrålning när denna del är öppnad och spärren är urkopplad. Betrakta ej strålen. (s)

ADVARSEL: Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling. (d)

VARO: Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen. (f)

CLASS 1
LASER PRODUCT

CLASSIFICATION LABEL
(Except for the U.S.A. and Canada)

CERTIFICATION PRINT BY DHHS
(Only for the U.S.A.)

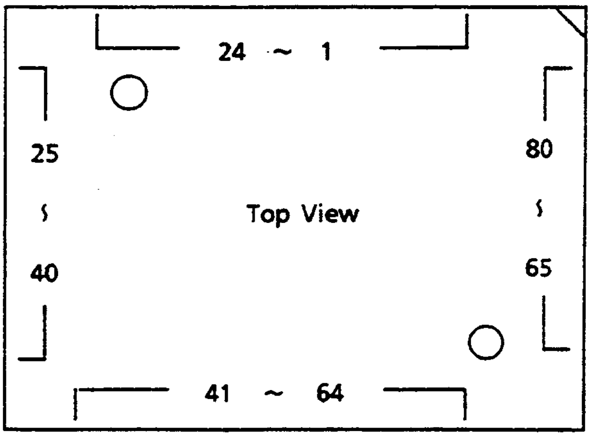
Description of ICs

■YM3805-H IC841

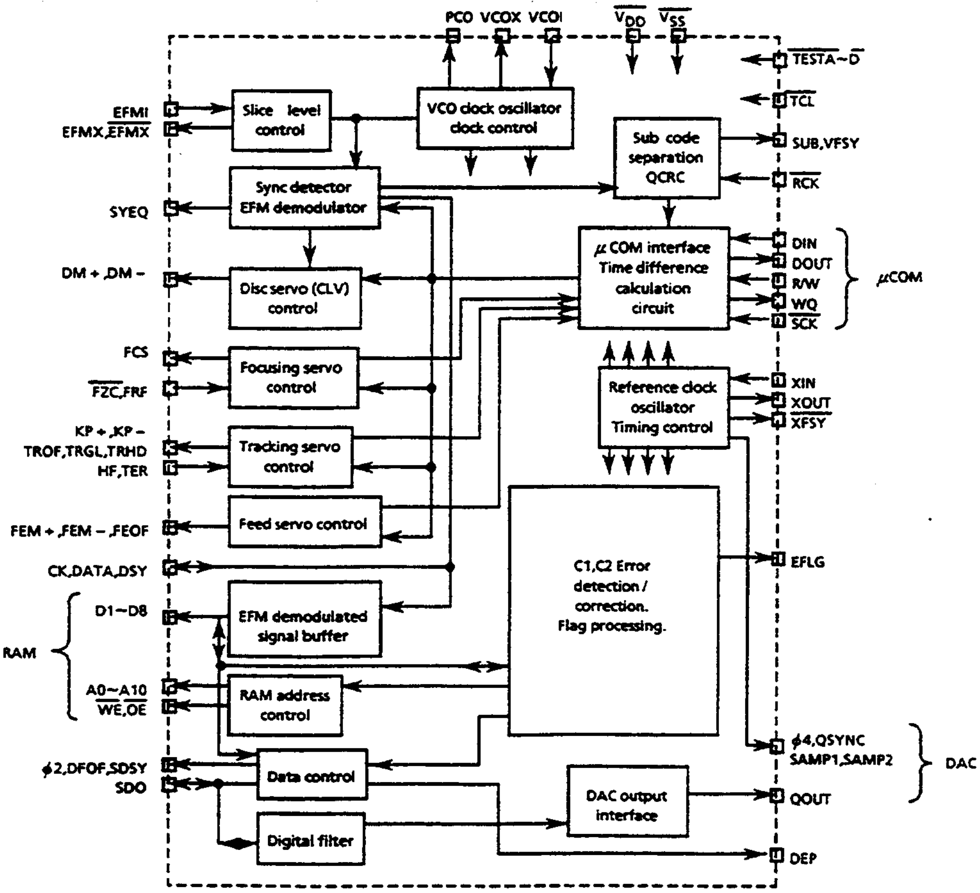
1. Outline:

YM3805-H is a C-MOS LSI for signal processing (SGP) and servo control (SVC) in a CD player. It is used for the demodulation of the EFM signal from the laser pickup, detection / correction of the error signal, signal processing in digital filtering, etc. and for various servo controls (focusing, tracking, spindle and feed servos).

2. Terminal Layout


24 ~ 1
25
∫
40
80
∫
65
Top View
41 ~ 64

3. Internal Block Diagram

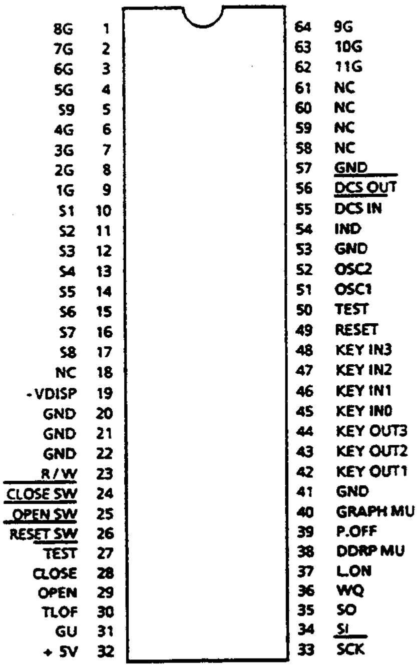

PCO VCOX VCOI
V_{DD} V_{SS}
TESTA~D
TCL
EFMI
EFMX,EFMX
Slice level control
VCO clock oscillator clock control
Sub code separation QCRC
SUB,VFSY
RCK
SYEQ
Sync detector EFM demodulator
μCOM interface Time difference calculation circuit
DIN
DOUT
R/W
WQ
SCK
μCOM
DM+,DM−
Disc servo (CLV) control
FCS
FZC,FRF
Focusing servo control
Reference clock oscillator Timing control
XIN
XOUT
XFSY
KP+,KP−
TROF,TRGL,TRHD
HF,TER
Tracking servo control
FEM+,FEM−,FEOF
Feed servo control
CK,DATA,DSY
C1,C2 Error detection / correction. Flag processing.
EFLG
RAM
D1~D8
EFM demodulated signal buffer
A0~A10
WE,OE
RAM address control
ϕ4,QSYNC
SAMP1,SAMP2
DAC
ϕ2,DFOF,SDSY
SDO
Data control
DAC output interface
QOUT
Digital filter
DEP

4. Pin Functions Description

Pin No.	Symbol	I/O	Functions and Operations
1 32 72	V_{DD}	–	These are +5V power supply terminals.
2 · 3	VCOX VCOI	O I	These terminals are used for oscillating VCO (Voltage Controlled Oscillator) clock. (8.6436MHz)
4	PCO	O	This terminal is control output terminal for VCO clock, and sets oscillation circuit to rise frequency when average voltage is high.
5 · 9 41 · 78	V_{SS}	–	These are ground terminals.
6 7	EFMX $\overline{EFMX}$	O O	These terminals connect with EFM signal slice level control circuit. Amplified EFM signal by limited amplitude comes from these terminals.
8	EFMI	I	Input the EFM signal (1~2Vpp) to the this terminal.
10	SYEQ	O	This is a monitor output terminal. It becomes "H" when there is a agreement synchronizing signal in EFM signal and inner counter.
11 12	DM+ DM–	O O	They are output terminals controlling disc motor drive circuit. These do not become "H" at the same time.
13 14 15	$\overline{FCS}$ $\overline{FZC}$ FRF	O I I	This is an output terminal for taking in focus. This is a terminal to get FZC signal which changing "H" to "L" when pick-up is in focus. Input "H" signal when there is reflected light of compact disc at this terminal.
16 17 19 20 21 22 23	HF TER TROF TRGL TRHD KP+ KP–	I I O O O O O	This is a terminal inputting envelope of EFM. This is a terminal inputting tracking error signal. This is a terminal for cutting off the tracking error signal of tracking servo circuit. This is an output terminal for getting down the gain of tracking servo circuit. This is an output terminal for holding tracking error signal of tracking servo circuit while following KP+ or KP– are output. They are connected with tracking servo circuit. They are terminals for searching.
24 25 26	FEOF FEM+ FEM–	O O O	This is an output terminal for cutting off the input signal of feed servo circuit. There are output signals for high speed feed and they are connected with feed servo circuit.
27	CK	I/O	This is the check terminal. It has a 4.3218MHz; half of VCO.
35	WQ	O	This connects with microcomputer. It is a request output terminal for demanding to send the data from SVC to microcomputer.
36	R/W	I	This connects with microcomputer and it is an output terminal for switching data transmission mode. It enables to transmit data from SVC to microcomputer when R/W is "L" and from microcomputer to SVC when R/W is "H". (Read/Write)
37	DOUT	O	This is a data output terminal. It enables to transmit the data from SVC to microcomputer according SCK clock input when R/W is "L".
38	DIN	I	This is a data input terminal. It enables to transmit the data from microcomputer to SVC according SCK clock input when R/W is "H".
39	$\overline{SCK}$	I	It is a clock input terminal needed for transmitting the data.
40 42~50 53	A0 A1~A9 A10	O	These are address output terminals and are connected to the RAM.
51	$\overline{WE}$	O	This terminal is connected to the RAM; the RAM is set to the write mode when this terminal is "L". (Write enable)
52	$\overline{OE}$	O	This terminal is connected to the RAM; the RAM is set to the read mode when this terminal is "L". (Output enable)
54~61	D8~D1	I/O	These are data Input and Output terminals and are connected to the RAM.
62	DEP	O	This terminal a Flag for de-emphasis. De-emphasis is necessary when this terminal is "H".
64 65 68	QSYNC QOUT Φ4	I/O O O	This terminal output the clock signals to find that the serial data is channel 1 or channel 2. This terminal output the digitarized audio signal. they come out channel 1 and channel 2 alternately. Φ4 is a 4.3218MHz crystal clock.
76 77	SAMP1 SAMP2	O O	These terminals connect with D/A converter. These signal are use to make degliching signal.
79 80	XIN XOUT	I O	A crystal resonator (8.6436MHz) is connected.
18 28~31 33 · 34 63 66 · 67 69~71 73~75			Not used.

■ HD404019RB14S (IC991) : Micro-computer

1. Terminal Layout

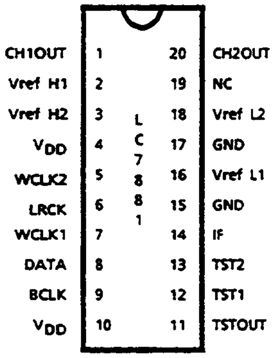

8G 1
7G 2
6G 3
5G 4
S9 5
4G 6
3G 7
2G 8
1G 9
S1 10
S2 11
S3 12
S4 13
S5 14
S6 15
S7 16
S8 17
NC 18
-VDISP 19
GND 20
GND 21
GND 22
R/W 23
CLOSE SW 24
OPEN SW 25
RESET SW 26
TEST 27
CLOSE 28
OPEN 29
TLOF 30
GU 31
+5V 32
64 9G
63 10G
62 11G
61 NC
60 NC
59 NC
58 NC
57 GND
56 DCS OUT
55 DCS IN
54 IND
53 GND
52 OSC2
51 OSC1
50 TEST
49 RESET
48 KEY IN3
47 KEY IN2
46 KEY IN1
45 KEY IN0
44 KEY OUT3
43 KEY OUT2
42 KEY OUT1
41 GND
40 GRAPH MU
39 P.OFF
38 DDRP MU
37 LON
36 WQ
35 SO
34 SI
33 SCK

2. Pin Description

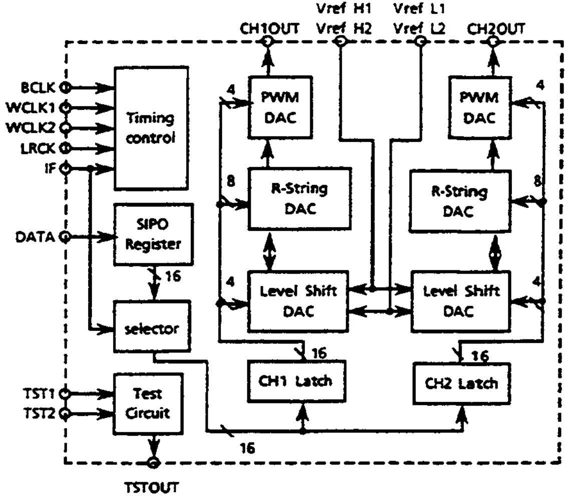
Pin No.	Symbol	I/O	Functions and Operations	Pin NO.	Symbol	I/O	Functions and Operations
1~4	8G~5G	O	FL grid control output	35	SO	O	Serial data output for IC841
5	S9	O	FL segment control output	36	WQ	I	Write request signal input
6~9	4G~1G	O	FL grid control output	37	LON	O	Laser on signal output
10~17	S1~S8	O	FL segment control output	38	DDRP MU	O	Mute signal output when stopping
18	NC	–	Non connection	39	P.OFF	O	Power off signal output
19	-VDISP	I	FL Power supply	40	Graph mu	O	ute signal output excepting CD
20~22	GND	–	Ground	41	GND	–	Ground
23	R/W	O	Read / Write signal output	42~44	KEY OUT0 ~ KEY OUT3	O	Key matrix output
24	$\overline{\text{CLOSE SW}}$	I	Close switch : active low	45~48	KEY IN0 ~ KEY IN3	I	Key matrix input
25	$\overline{\text{OPEN SW}}$	I	Open switch : active low	49	RESET	I	Reset signal input
26	$\overline{\text{RESET}}$ SW	I	Reset switch : active low at the inmost position of pickup	50	TEST	I	Test mode input : connected to + 5V
27	$\overline{\text{TEST}}$	I	Test mode input	51	OSC 1	I	Clock Oscillation input
28	CLOSE	O	Close signal output	52	OSC 2	O	Clock Oscillation output
29	OPEN	O	Open signal output	53,57	GND	–	Ground
30	TLOF	O	Tracking servo off signal output	54	$\overline{\text{IND}}$	O	Auto power off indicator signal
31	GU	O	Tracking gain up signal output	55	$\overline{\text{DCS IN}}$	I	Compu-link signal input
32	Vcc	–	+ 5V	56	$\overline{\text{DCS OUT}}$	O	Compu-link signal output
33	$\overline{\text{SCK}}$	O	Clock output for IC841	58~61	NC	–	Non connection
34	SI	I	Serial data input from IC841	62~64	11G~9G	O	FL grid control output

■ LC7881-C (IC873) : D/A converter

1. Terminal Layout


CH1OUT
Vref H1
Vref H2
VDD
WCLK2
LRCK
WCLK1
DATA
BCLK
VDD
1
2
3
4
5
6
7
8
9
10
LC7881
20
19
18
17
16
15
14
13
12
11
CH2OUT
NC
Vref L2
GND
Vref L1
GND
IF
TST2
TST1
TSTOUT

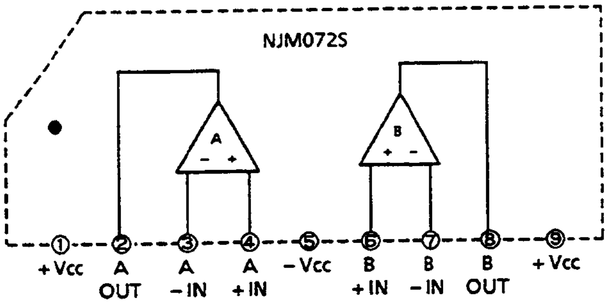
2. Block Diagram


Vref H1
Vref L1
CH1OUT
Vref H2
Vref L2
CH2OUT
BCLK
WCLK1
WCLK2
LRCK
IF
Timing control
DATA
SIPO Register
16
selector
TST1
TST2
Test Circuit
TSTOUT
PWM DAC
R-String DAC
Level Shift DAC
CH1 Latch
CH2 Latch
4
8
4
16
16
16

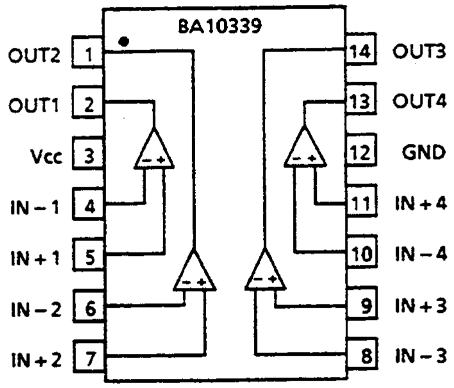
3. Pin Functions

Pin No	Symbol	I/O	Functions and Operations
1	CH1 OUT	O	Channel 1 Output pin.
2	Vref H1	I	Reference voltage "H" input pin1.
3	Vref H2	I	Reference voltage "H" input pin2.
4	V_{DD}	—	Power supply, +5V.
5	WCLK2	I	Word clock 2 input pin. When IF pin is at high level, WCLK2 pin should be set at low level. When IF pin is at low level, this generates the internal signal used to latch the CH1 data of the digital audio signal, using the falling edge of WCLK2.
6	LRCK	I	LR clock input pin. This shows the CH1 and CH2 of the input digital audio data. When LRCK is at high level, it corresponds to CH1 data. When LRCK is at low level, it corresponds to CH2 data.
7	WCLK1	I	Word clock 1 input pin. When IF pin is at high level, this pin generates the internal signal used to latch both the CH1 and CH2 data, using the falling edge of WCLK1. When IF pin is at low level, it generates the internal signal used to latch the CH2 data.
8	DATA	I	Digital audio data input pin. When IF pin is at high level, the data signal is input by each bit serially from the MSB. When IF pin is at low level, the data signal is input by each bit serially from the LSB.
9	BCLK	I	Bit clock pin. This clock signal is used when reading the digital audio data by each bit serially, and also used for PWM D/A converter.
10	V_{DD}		Power supply, +5V.
11	TST OUT	O	Test signal output pin. Normally leave this pin open.
12 13	TST1 TST2	I	Test signal input pin. Normally connect to GND terminal.
14	IF	I	Interface select pin. When IF pin is at high level, the digital audio data is input from the MSB first. When IF pin is at low level, the digital audio data is input from the LSB first.
15	GND	—	Ground.
16	Vref L1	I	Reference voltage "L" input pin1.
17	GND	—	Ground.
18	Vref L2	I	Reference voltage "L" input pin2.
19	NC	—	No connection.
20	CH2 OUT	O	Channel 2 output pin.

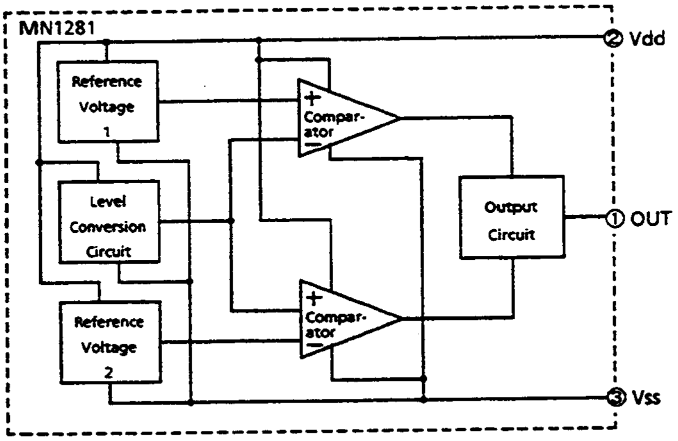
■ NJM072S (IC801) : Dual OP Amp.


NJM072S
A
B
①
+Vcc
②
A OUT
③
A −IN
④
A +IN
⑤
−Vcc
⑥
B +IN
⑦
B −IN
⑧
B OUT
⑨
+Vcc

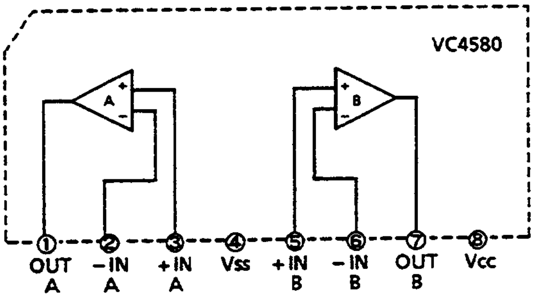
■ BA10339 (IC802) : Comparator


BA10339
OUT2 1
OUT1 2
Vcc 3
IN−1 4
IN+1 5
IN−2 6
IN+2 7
14 OUT3
13 OUT4
12 GND
11 IN+4
10 IN−4
9 IN+3
8 IN−3

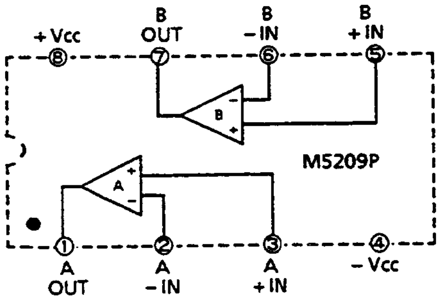
■ MN1281 (P,Q) (IC992) : Reset IC


MN1281
Reference Voltage 1
Level Conversion Circuit
Reference Voltage 2
Compar-ator
Compar-ator
Output Circuit
② Vdd
① OUT
③ Vss

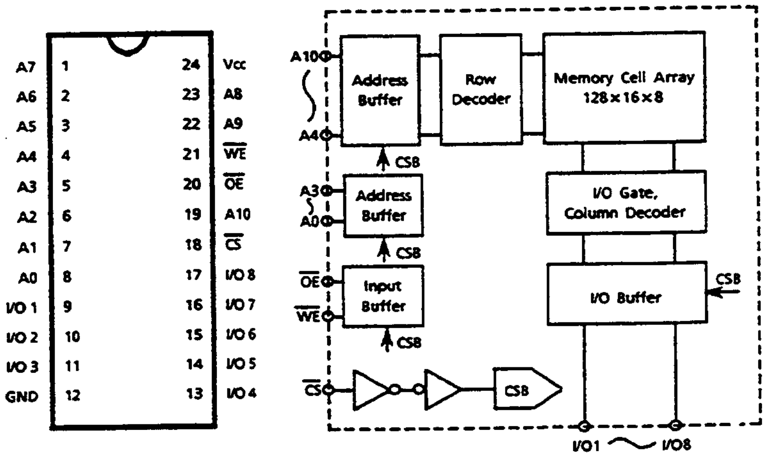
■ VC4580L (IC762,781,803) XRA15218N (IC871,872) : Dual OP Amp.


VC4580
A
B
①
OUT A
②
−IN A
③
+IN A
④
Vss
⑤
+IN B
⑥
−IN B
⑦
OUT B
⑧
Vcc

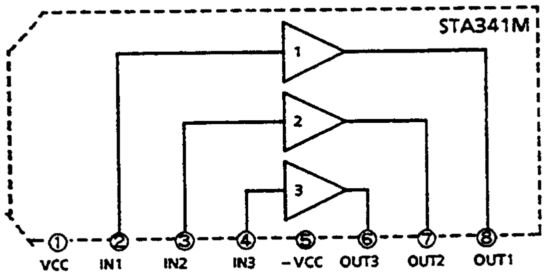
■ M5209P (IC843) : Dual OP Amp.


+Vcc
⑧
B OUT
⑦
B −IN
⑥
B +IN
⑤
B
M5209P
A
①
A OUT
②
A −IN
③
A +IN
④
−Vcc

■ LC3517BS-15 (IC842) : Static RAM


A7 1
A6 2
A5 3
A4 4
A3 5
A2 6
A1 7
A0 8
I/O 1 9
I/O 2 10
I/O 3 11
GND 12
24 Vcc
23 A8
22 A9
21 WE
20 OE
19 A10
18 CS
17 I/O 8
16 I/O 7
15 I/O 6
14 I/O 5
13 I/O 4
A10
A4
Address Buffer
Row Decoder
Memory Cell Array 128×16×8
CSB
A3
A0
Address Buffer
CSB
I/O Gate, Column Decoder
OE
WE
Input Buffer
CSB
I/O Buffer
CSB
CS
CSB
I/O1 ∼ I/O8

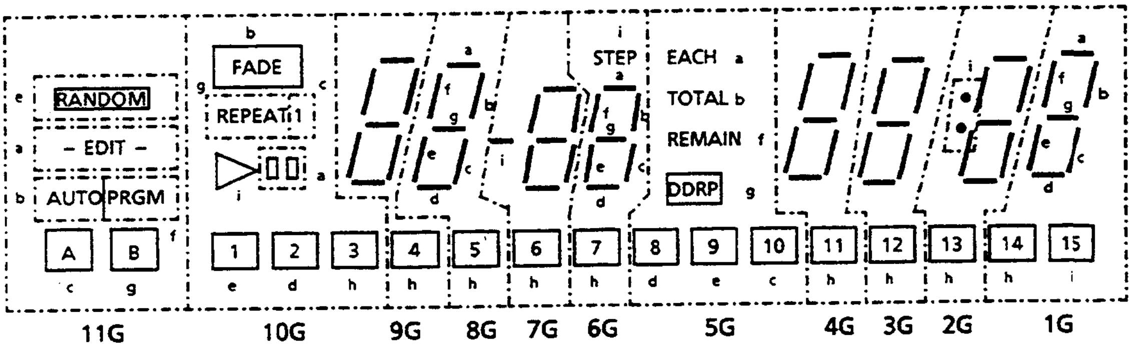
■ STA341M (IC801) : Motor Driver


STA341M
1
2
3
①
VCC
②
IN1
③
IN2
④
IN3
⑤
−VCC
⑥
OUT3
⑦
OUT2
⑧
OUT1

Internal Connections of FL Display Tube

■ELU0001-114 (FL991)

1. Grid Layout


RANDOM
- EDIT -
AUTO
PRGM
A
B
FADE
REPEAT
1
STEP
EACH
TOTAL
REMAIN
DDRP
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
11G
10G
9G
8G
7G
6G
5G
4G
3G
2G
1G

2. Pin Connection

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Electrode	F1	F1	NP	NC	11G	10G	9G	8G	7G	6G	5G	P (i)	4G	3G	2G	1G	P (a)	P (b)	P (f)

Pin No.	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
Electrode	P (g)	P (c)	P (e)	P (d)	P (h)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NP	F2	F2

Note····F: Filament, G: Grid, a~i: Element, NP: No pin, NC: No connection

Disassembly Procedures

1 Removing the top cover

(1) Remove the 2 screws on both sides of the top cover and the 4 screws on the rear side.

(2) Gently spread both sides of the top cover to the outside, lift up the rear section, and remove the top cover.

2 Removing the tray

(1) Remove the top cover.
(2) Switct on the power of AX-MX70BK. Press the OPEN / CLOSE switch to bring the tray forward and with the tray forward, switch off the power.

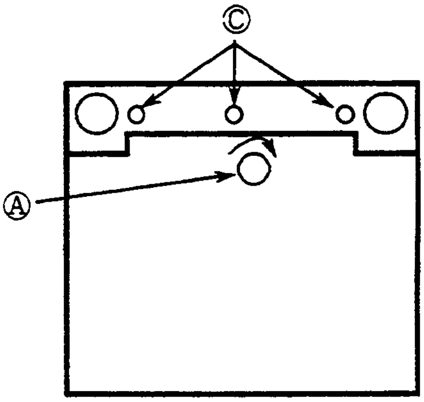
(3) Remove the screw on the tray Ⓑ.
(4) Pull the tray toward the front to move it.

Note : If the power does not come on due to breakdown or the , insert a Philips screwdriver through the hole at the bottom of the front panel and turn it clockwise to bring the tray forward Ⓐ.

3 Removing the front panel assembly

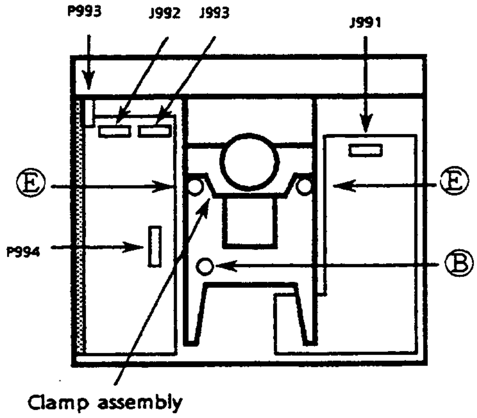
(1) Remove the top cover.
(2) Remove the connectors(J991 , J992 , J993) connecting with main PC Boards.

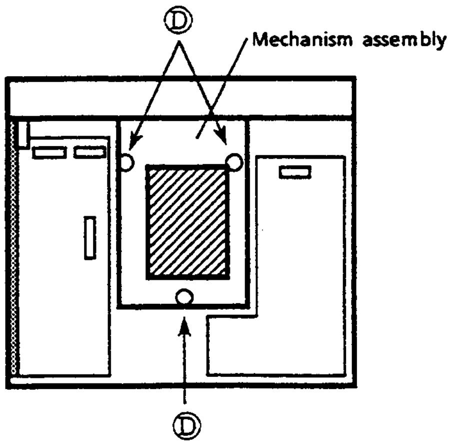
(3) Remove the 3 screws Ⓒ at the bottom of the front panel.



4 Removing the mechanism assembly

(1) Remove the top cover.
(2) Remove the tray.
(3) Remove the connectors (P993 , P994).
(4) Remove the 2 screws Ⓔ holding the clamp assembly, then remove it.
(5) Remove the 3 screws Ⓓ holding the mechanism assembly.





6. Removing the Laser Pickup

(1) Remove the top cover, tray assembly and the clamp.

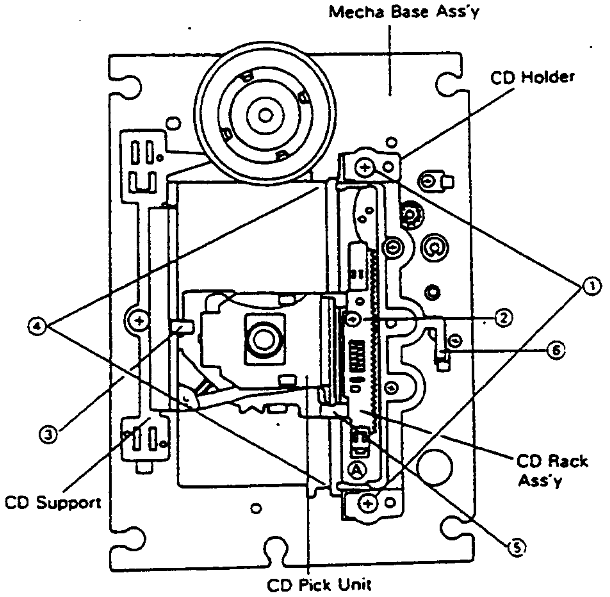
(2) Move the Pickup Unit from rest position to the center pushing ⑤ point with finger.

(3) Remove the screw ② from the CD RACK assembly, and remove the CD RACK assembly.

(4) Remove the screw① from the mechanical base assembly.

(5) Remove the CD HOLDER fastening the shaft from the mechanical base assembly.(Release the hook ⑥)

(6) Remove the CD Pick Unit with the shaft.



7. Laser Pickup installation

(1) Connect two wires with the connectors of P.C.Board.

(2) While installing the ③ in the CD Support, set the shaft on the base hook④.

(3) Install the CD Holder.

(4) Install THE CD Rack assembly in CD Pick Unit.
   1) Fit end Ⓐ
   2) Fix screw ②.

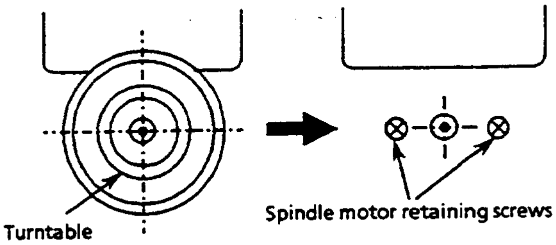
8. Spindle motor removal

(1) Remove the Mechanism assembly.

(2) Remove the Clamp assembly.

(3) Remove the turntable, and remove the two screws retaining the spindle motor.

(4) Remove the screw retaining the Spindle andFeed Motor P.C. Board and unsolder it.

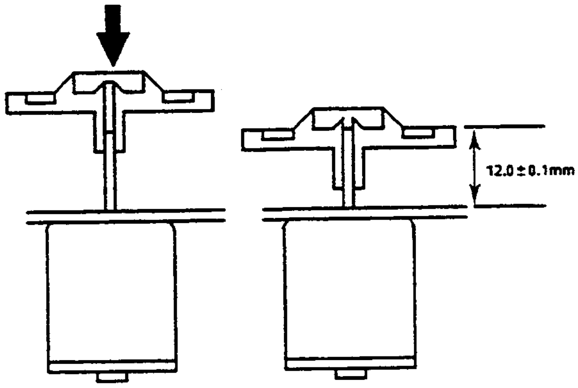


9. Spindle motor installation

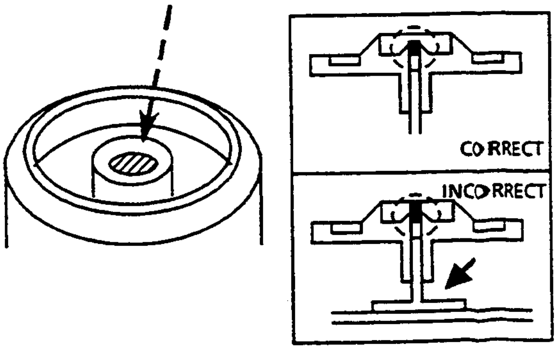
(1) Tighten the 2 screws to the same torque.

(2) Fasten the Spindle and Feed Motor P.C. Board with the screw and solder.

(3) Install the turntable.When installing, press straight down at the center of the turntable until the distance from the surface of the mechanism base to the top of the turntable is exactly 12.0 ± 0.1mm.



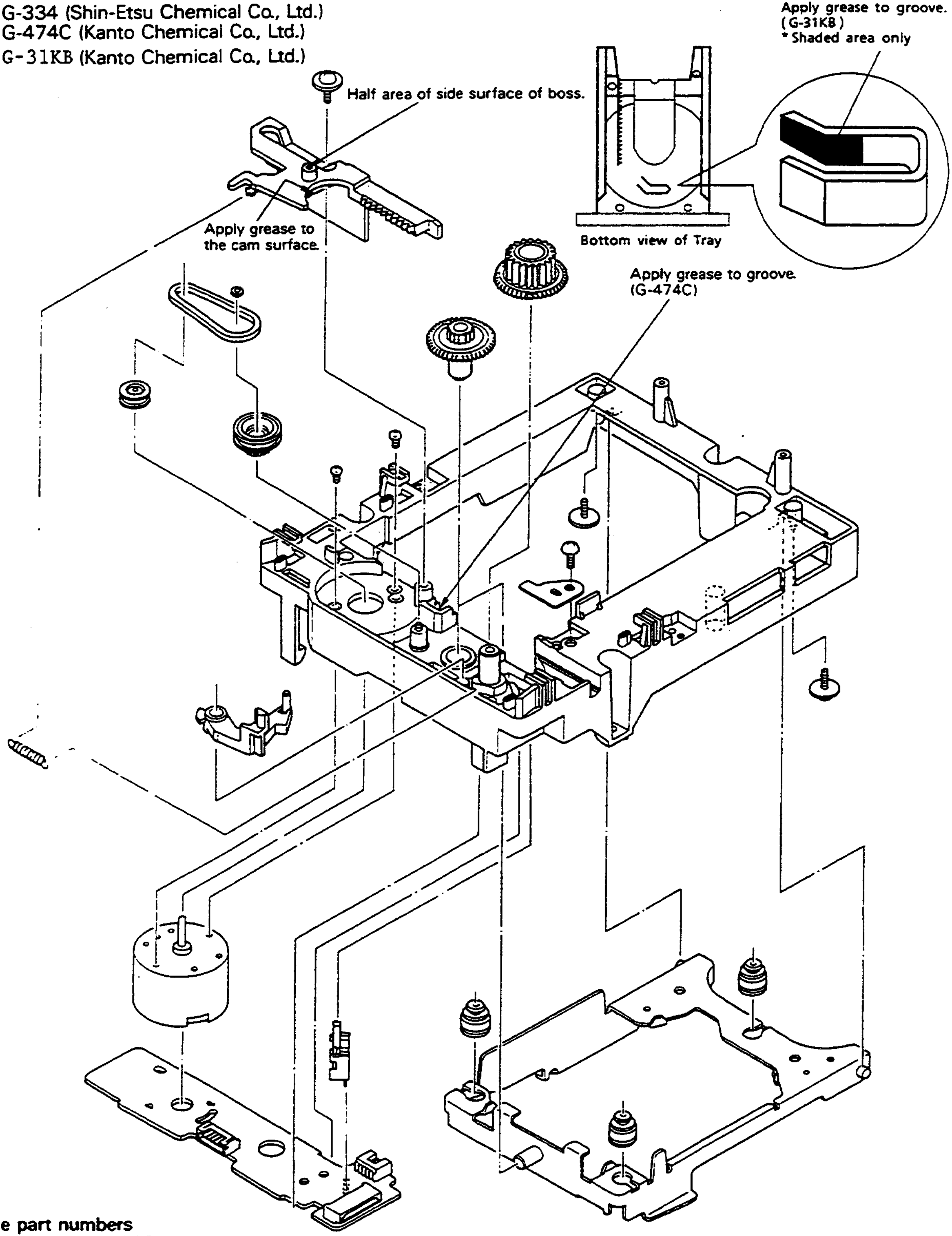
(4) After insertion is complete, bond the motor shaft and turntable together (at the section marked by an arrow in the figure on the left below).



(5) Use "LOCKTITE" #460 bonding agent, and apply as little as possible. Take care not to allow any excess bonding agent to get onto the turntable. Be extremely careful not to allow bonding agent to adhere to the motor bearings (the section marked by an allow in the figure on the right.)

Application Points for Grease

Grease used
■ G-334 (Shin-Etsu Chemical Co., Ltd.)
□ G-474C (Kanto Chemical Co., Ltd.)
■ G-31KB (Kanto Chemical Co., Ltd.)


Apply grease to groove.
(G-31KB)
* Shaded area only
Half area of side surface of boss.
Apply grease to the cam surface.
Bottom view of Tray
Apply grease to groove.
(G-474C)

Grease part numbers
G-334: EBS0006-009B
G-474C: EBS0006-019B
G-31KB: EBS0006-013B

Maintenance of Laser Pickup

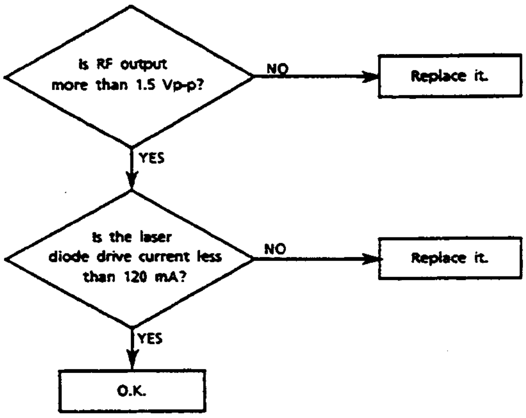
1. Life of the laser diode

When the life of the laser diode has expired, the following symptoms will appear.

(1) The level of RF output (EFM output: amplitude of eye pattern) will be low.

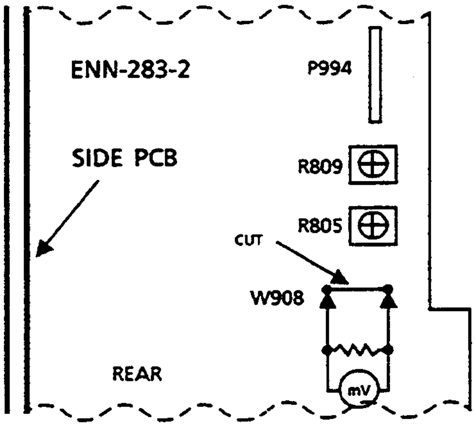
(2)The drive current required by the laser diode will be increased.

In such a case, check the life of the laser diode following the flowchart below


Is RF output more than 1.5 Vp-p?
NO
Replace it.
YES
Is the laser diode drive current less than 120 mA?
NO
Replace it.
YES
O.K.

2. Measurement of laser diode drive current

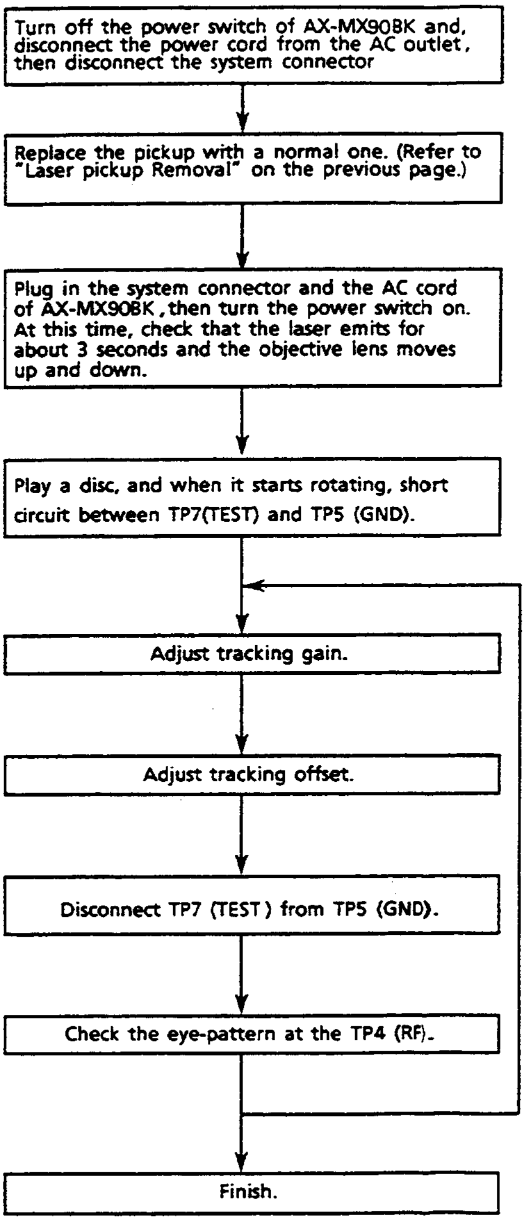
Replace the jump wire (W908) shown below with the resistor (1Ω).
Measure the voltage across the resistor with a milli-voltmeter. When the voltage is more than 120mV, it shows that the life of the laser diode has expired



3. Semi-fixed resistor on the APC PC board

The semi-fixed resistor on the APC printed circuit board which is attached to the pickup is used to adjust the laser power. Since this adjustment should be performed to match the characteristics of the whole optical block, do not touch the semi-fixed resistor.
If the laser power is lower than the specified value, the laser diode is almost worn out, and the laser pickup should be replaced.
If the semi-fixed resistor is adjusted while the pickup is functioning normally, the laser pickup may be damaged due to excessive current.

Replacement of Laser Pickup



Turn off the power switch of AX-MX90BK and, disconnect the power cord from the AC outlet, then disconnect the system connector

Replace the pickup with a normal one. (Refer to "Laser pickup Removal" on the previous page.)

Plug in the system connector and the AC cord of AX-MX90BK, then turn the power switch on. At this time, check that the laser emits for about 3 seconds and the objective lens moves up and down.

Play a disc, and when it starts rotating, short circuit between TP7(TEST) and TP5 (GND).

Adjust tracking gain.

Adjust tracking offset.

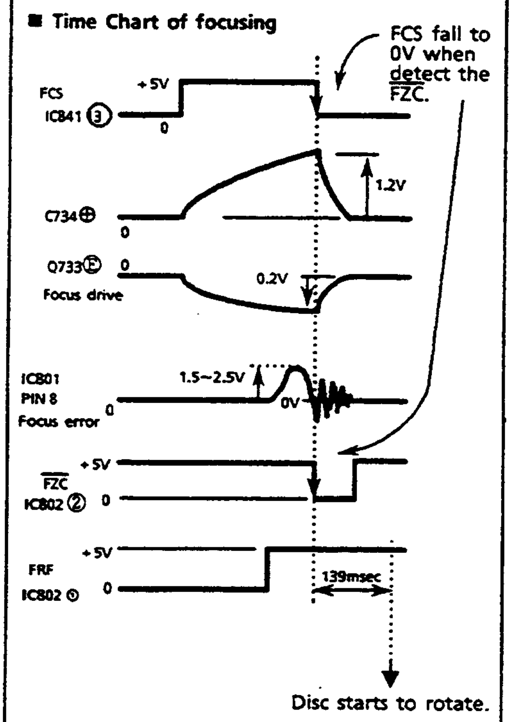
Disconnect TP7 (TEST) from TP5 (GND).

Check the eye-pattern at the TP4 (RF).

Finish.

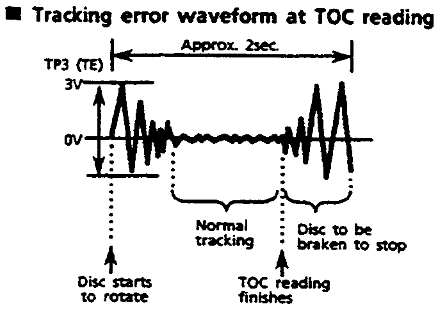
Note: Since one adjustment may affect other settings, repeat these adjustments a few times.

Flow of Functional Operation Until TOC is Read



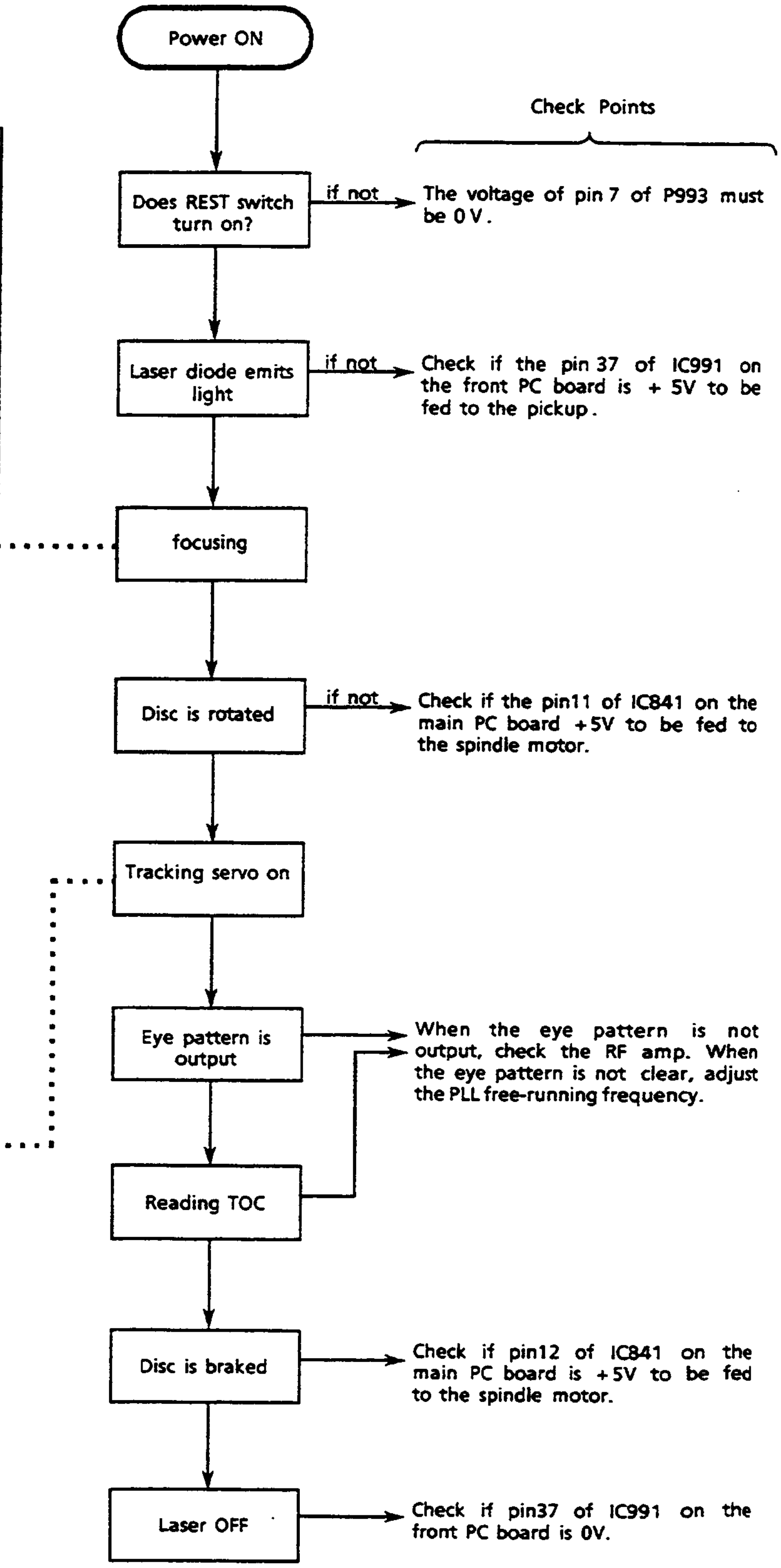
- When the lens moves up and down in a 2-seconds interval, FZC is not output.
- When the lens moves up and down in less than 1-second, FRF is not output or the focus servo loop is abnormal.

Fig-1



■ **When the tracking loop does not turn ON, check the tracking offset and align it to 0.**

Fig-2


Power ON
Check Points
Does REST switch turn on?
if not
Laser diode emits light
if not
focusing
Disc is rotated
if not
Tracking servo on
Eye pattern is output
Reading TOC
Disc is braked
Laser OFF

The voltage of pin 7 of P993 must be 0 V.

Check if the pin 37 of IC991 on the front PC board is + 5V to be fed to the pickup.

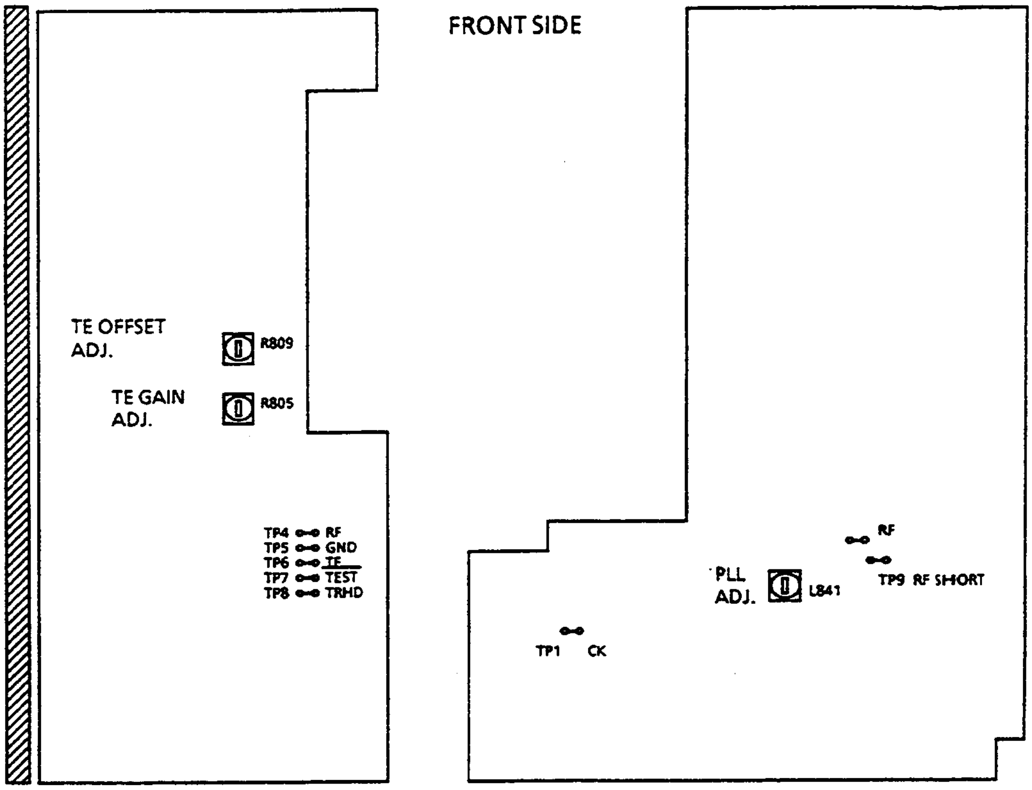
Check if the pin11 of IC841 on the main PC board +5V to be fed to the spindle motor.

When the eye pattern is not output, check the RF amp. When the eye pattern is not clear, adjust the PLL free-running frequency.

Check if pin12 of IC841 on the main PC board is +5V to be fed to the spindle motor.

Check if pin37 of IC991 on the front PC board is 0V.

Adjustment Procedures


FRONT SIDE
TE OFFSET ADJ.
R809
TE GAIN ADJ.
R805
TP4 RF
TP5 GND
TP6 TE
TP7 TEST
TP8 TRHD
PLL ADJ.
L841
RF
TP9 RF SHORT
TP1 CK

* Use AX-MX90BK when adjusting.

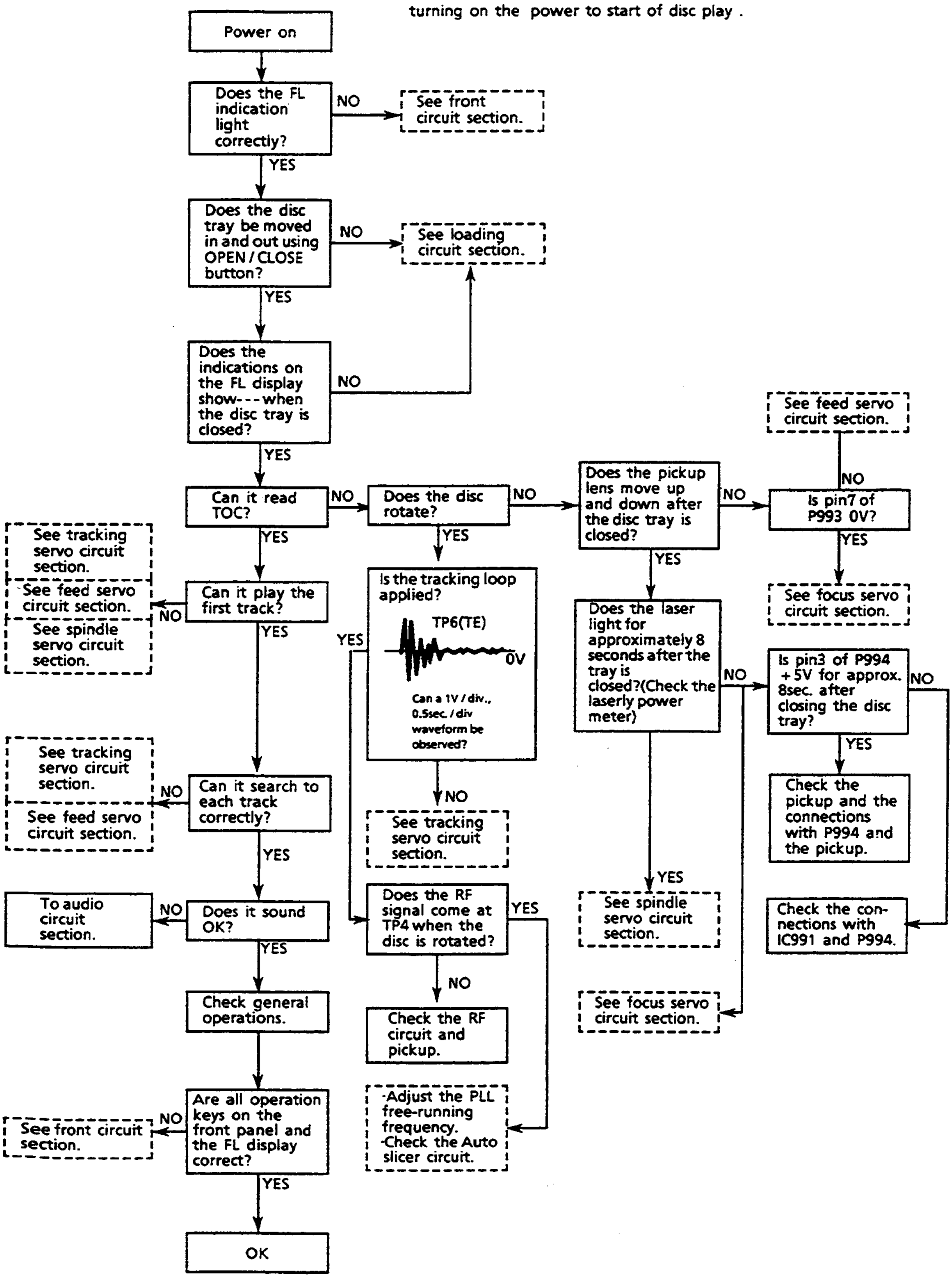
1. **PLL free-running adjustment**
   1) Measuring instrument
      Frequency counter
   2) Adjusting procedure
      (1) Connect a frequency counter with TP1 (CK) and TP5 (GND) on the main PC board. Short circuit TP9 to TP5(GND).
      (2) Adjust L841 for setting the frequency counter's value becomes 4.320 ± 0.005MHz.

2. **Tracking gain adjustment**
   1) Measuring instruments
      Oscilloscope, Normal disc
   2) Adjusting procedure
      (1) Connect an oscilloscope with TP6 (TE) and TP5 (GND) on the main PC board
      (2) Play a disc.
      (3) Short circuit TP7 (TEST) to TP5 (GND).
      (4) Adjust R805 for setting tracking error signal becomes 2.0 V_{P-P}.

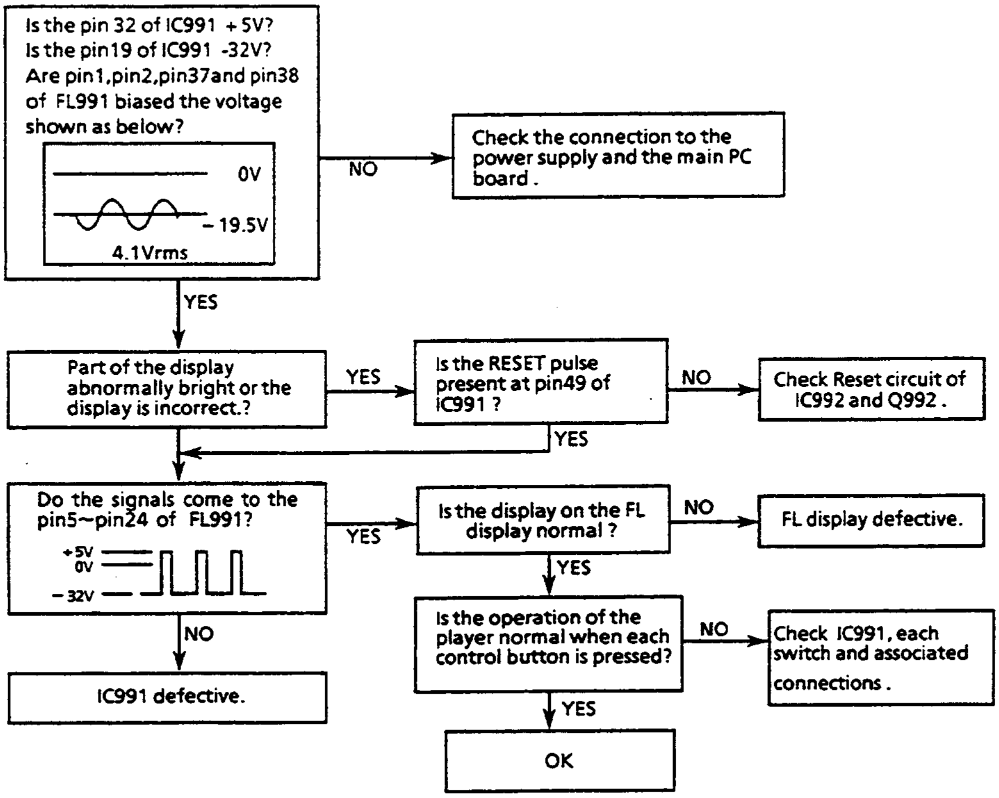
3. **Tracking offset adjustment**
   1) Measuring instruments
      Oscilloscope, Normal disc
   2) Adjusting procedure
      (1) Connect an oscilloscope with TP6 (TE) and TP5 (GND) on the main PC board
      (2) Play a disc.
      (3) Short circuit TP7 (TEST) to TP5 (GND).
      (4) Adjust R809 for setting the DC level of the tracking error (off set) becomes 0.

Troubleshooting

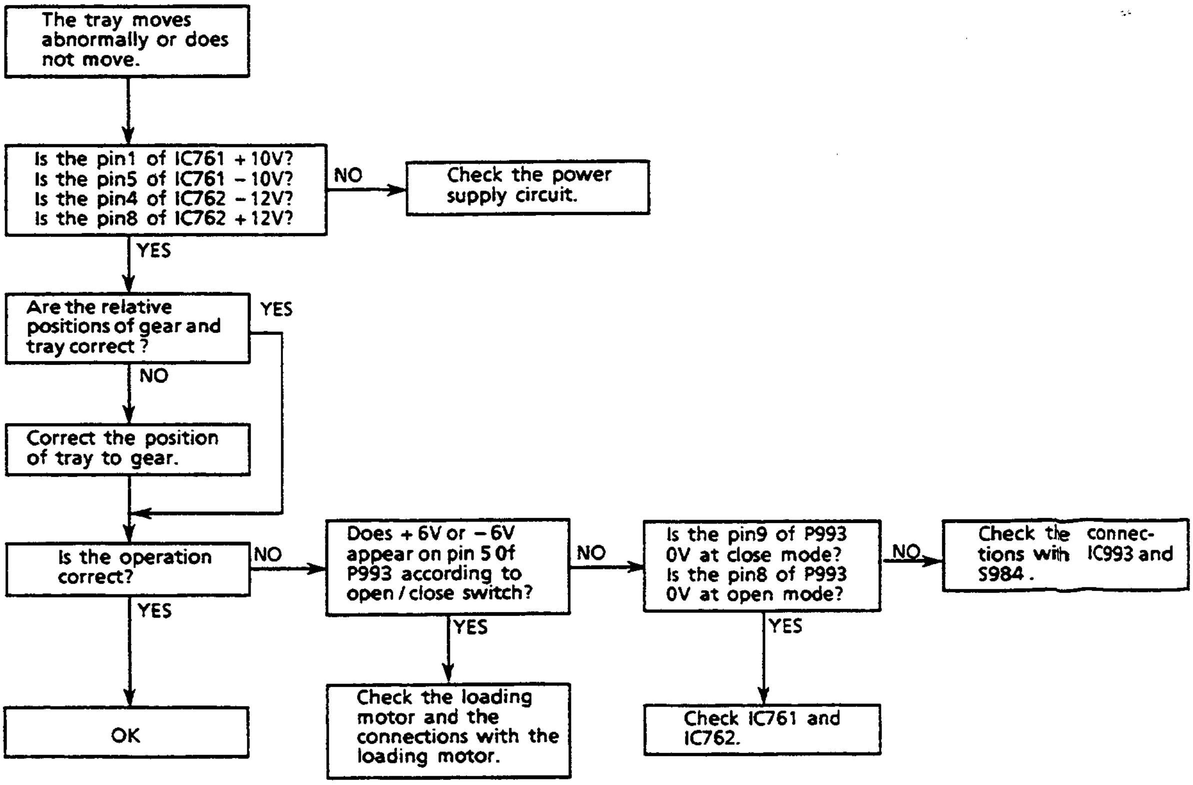
The following shows the status of the various circuits from turning on the power to start of disc play .


Power on
Does the FL indication light correctly?
NO
See front circuit section.
YES
Does the disc tray be moved in and out using OPEN / CLOSE button?
NO
See loading circuit section.
YES
Does the indications on the FL display show- - - when the disc tray is closed?
NO
YES
Can it read TOC?
NO
Does the disc rotate?
NO
Does the pickup lens move up and down after the disc tray is closed?
NO
Is pin7 of P993 0V?
NO
See feed servo circuit section.
YES
See focus servo circuit section.
YES
Does the laser light for approximately 8 seconds after the tray is closed?(Check the laserly power meter)
NO
Is pin3 of P994 +5V for approx. 8sec. after closing the disc tray?
YES
Check the pickup and the connections with P994 and the pickup.
NO
Check the connections with IC991 and P994.
See focus servo circuit section.
YES
See spindle servo circuit section.
YES
Is the tracking loop applied?
TP6(TE)
0V
Can a 1V / div., 0.5sec. / div waveform be observed?
NO
See tracking servo circuit section.
YES
Does the RF signal come at TP4 when the disc is rotated?
NO
Check the RF circuit and pickup.
YES
·Adjust the PLL free-running frequency.
·Check the Auto slicer circuit.
YES
Can it play the first track?
NO
See tracking servo circuit section.
See feed servo circuit section.
See spindle servo circuit section.
YES
Can it search to each track correctly?
NO
See tracking servo circuit section.
See feed servo circuit section.
YES
Does it sound OK?
NO
To audio circuit section.
YES
Check general operations.
Are all operation keys on the front panel and the FL display correct?
NO
See front circuit section.
YES
OK

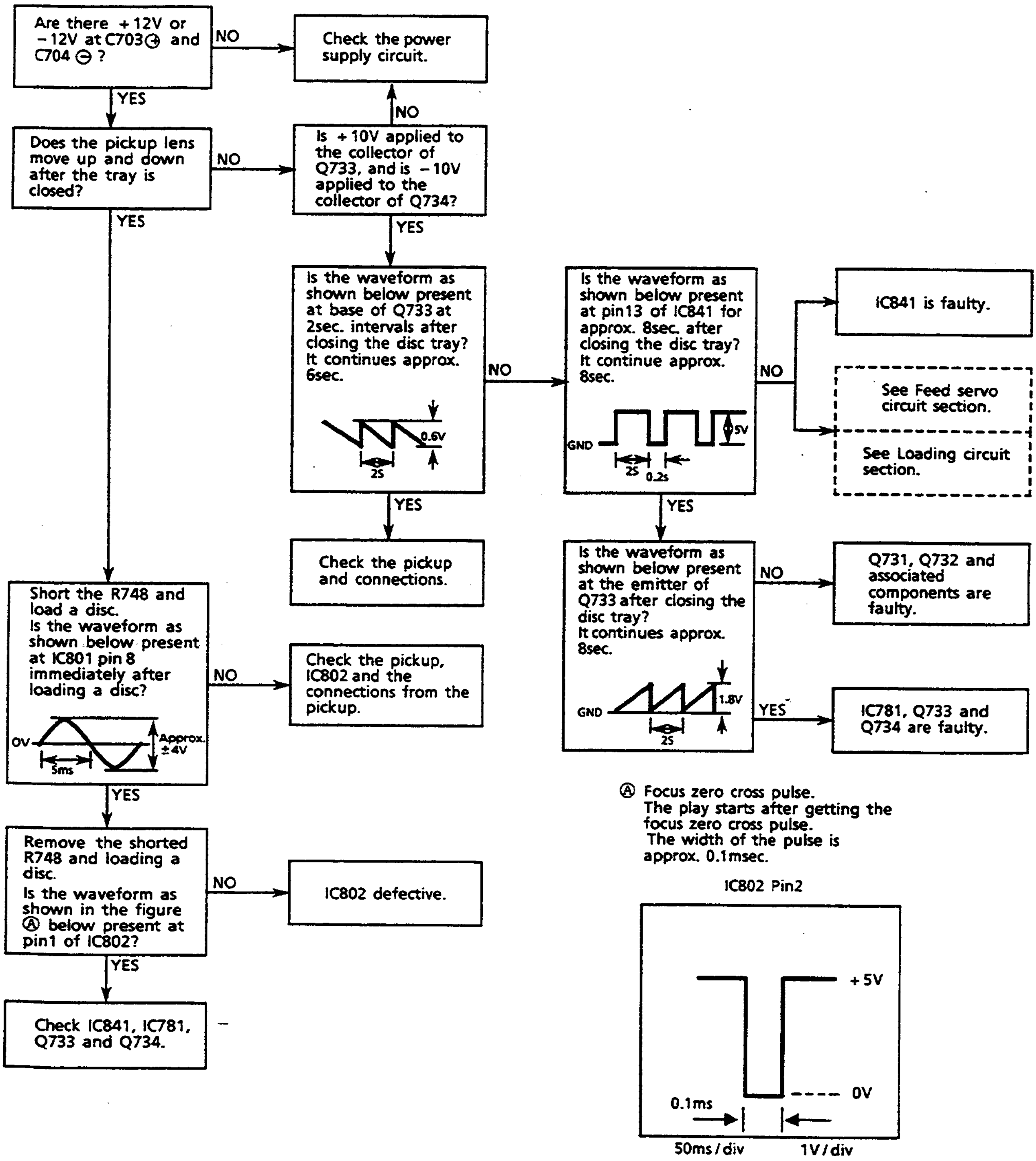
Front circuit Section


Is the pin 32 of IC991 +5V?
Is the pin19 of IC991 -32V?
Are pin1,pin2,pin37and pin38 of FL991 biased the voltage shown as below?
0V
-19.5V
4.1Vrms
NO
Check the connection to the power supply and the main PC board.
YES
Part of the display abnormally bright or the display is incorrect.?
YES
Is the RESET pulse present at pin49 of IC991 ?
NO
Check Reset circuit of IC992 and Q992.
YES
Do the signals come to the pin5~pin24 of FL991?
+5V
0V
-32V
YES
Is the display on the FL display normal ?
NO
FL display defective.
NO
IC991 defective.
YES
Is the operation of the player normal when each control button is pressed?
NO
Check IC991, each switch and associated connections.
YES
OK

Loading circuit section


The tray moves abnormally or does not move.
Is the pin1 of IC761 +10V?
Is the pin5 of IC761 -10V?
Is the pin4 of IC762 -12V?
Is the pin8 of IC762 +12V?
NO
Check the power supply circuit.
YES
Are the relative positions of gear and tray correct ?
YES
NO
Correct the position of tray to gear.
Is the operation correct?
NO
Does +6V or -6V appear on pin 5 0f P993 according to open / close switch?
NO
Is the pin9 of P993 0V at close mode?
Is the pin8 of P993 0V at open mode?
NO
Check the connections with IC993 and S984.
YES
OK
YES
Check the loading motor and the connections with the loading motor.
YES
Check IC761 and IC762.

Focus circuit section

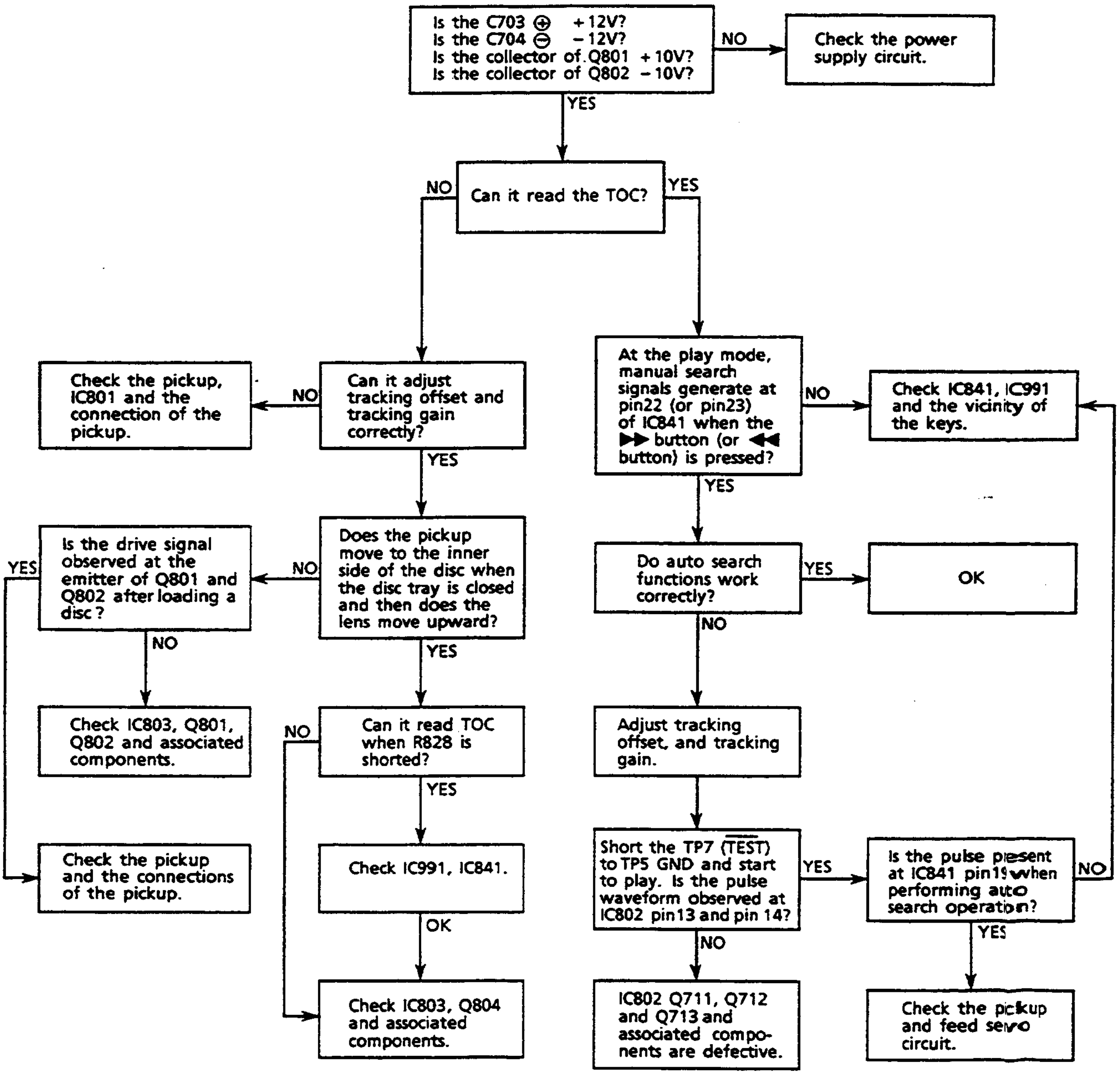

Are there +12V or −12V at C703⊕ and C704⊖ ?
NO
Check the power supply circuit.
YES
Does the pickup lens move up and down after the tray is closed?
NO
Is +10V applied to the collector of Q733, and is −10V applied to the collector of Q734?
NO
YES
YES
Is the waveform as shown below present at base of Q733 at 2sec. intervals after closing the disc tray? It continues approx. 6sec.
0.6V
2S
NO
Is the waveform as shown below present at pin13 of IC841 for approx. 8sec. after closing the disc tray? It continue approx. 8sec.
GND
5V
2S
0.2s
NO
IC841 is faulty.
See Feed servo circuit section.
See Loading circuit section.
YES
Check the pickup and connections.
YES
Is the waveform as shown below present at the emitter of Q733 after closing the disc tray? It continues approx. 8sec.
GND
1.8V
2S
NO
Q731, Q732 and associated components are faulty.
YES
IC781, Q733 and Q734 are faulty.
Short the R748 and load a disc. Is the waveform as shown below present at IC801 pin 8 immediately after loading a disc?
0V
5ms
Approx. ±4V
NO
Check the pickup, IC802 and the connections from the pickup.
YES
Remove the shorted R748 and loading a disc. Is the waveform as shown in the figure Ⓐ below present at pin1 of IC802?
NO
IC802 defective.
YES
Check IC841, IC781, Q733 and Q734.

Ⓐ Focus zero cross pulse.
The play starts after getting the focus zero cross pulse.
The width of the pulse is approx. 0.1msec.

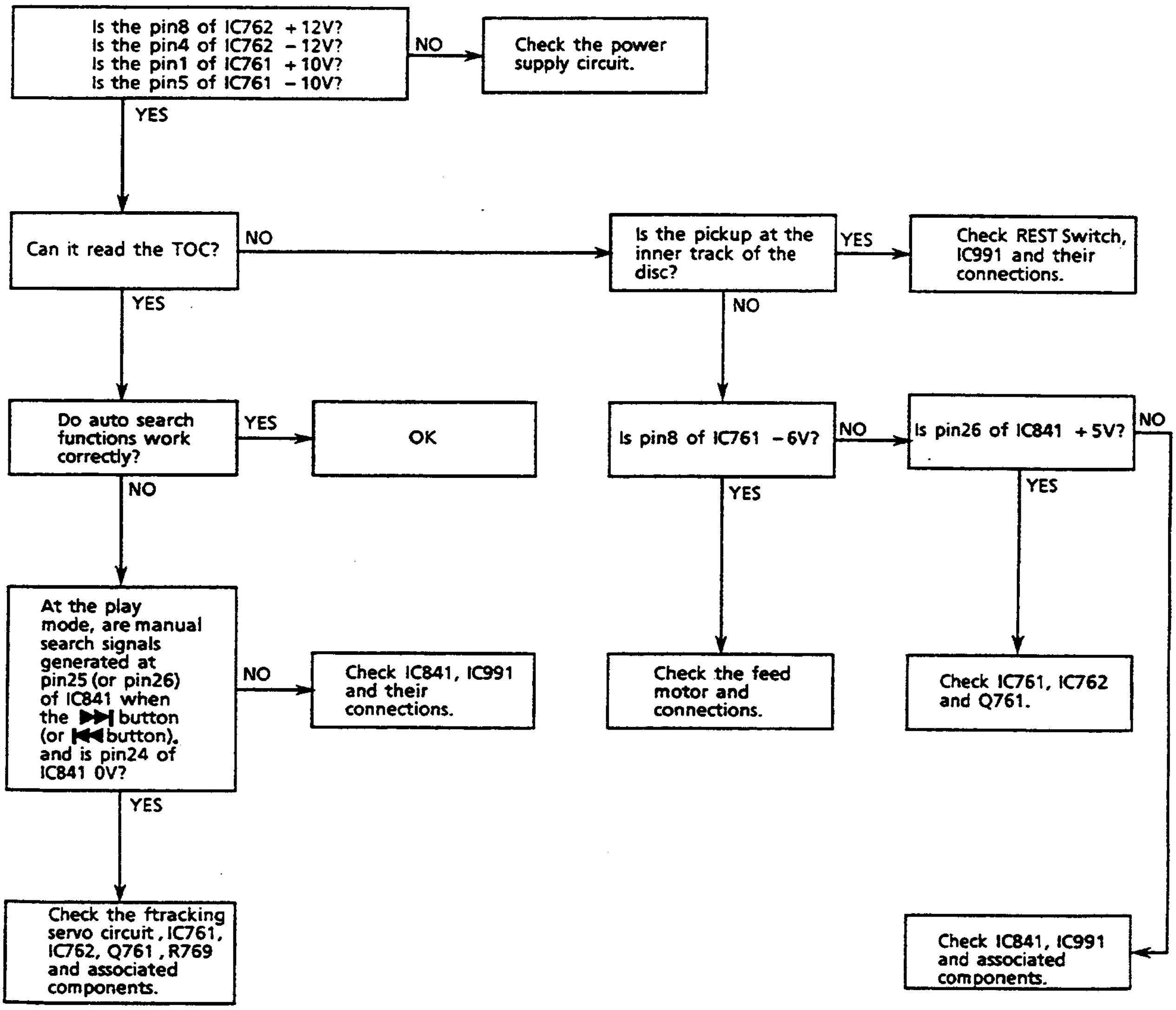
IC802 Pin2

+5V
0V
0.1ms
50ms/div
1V/div

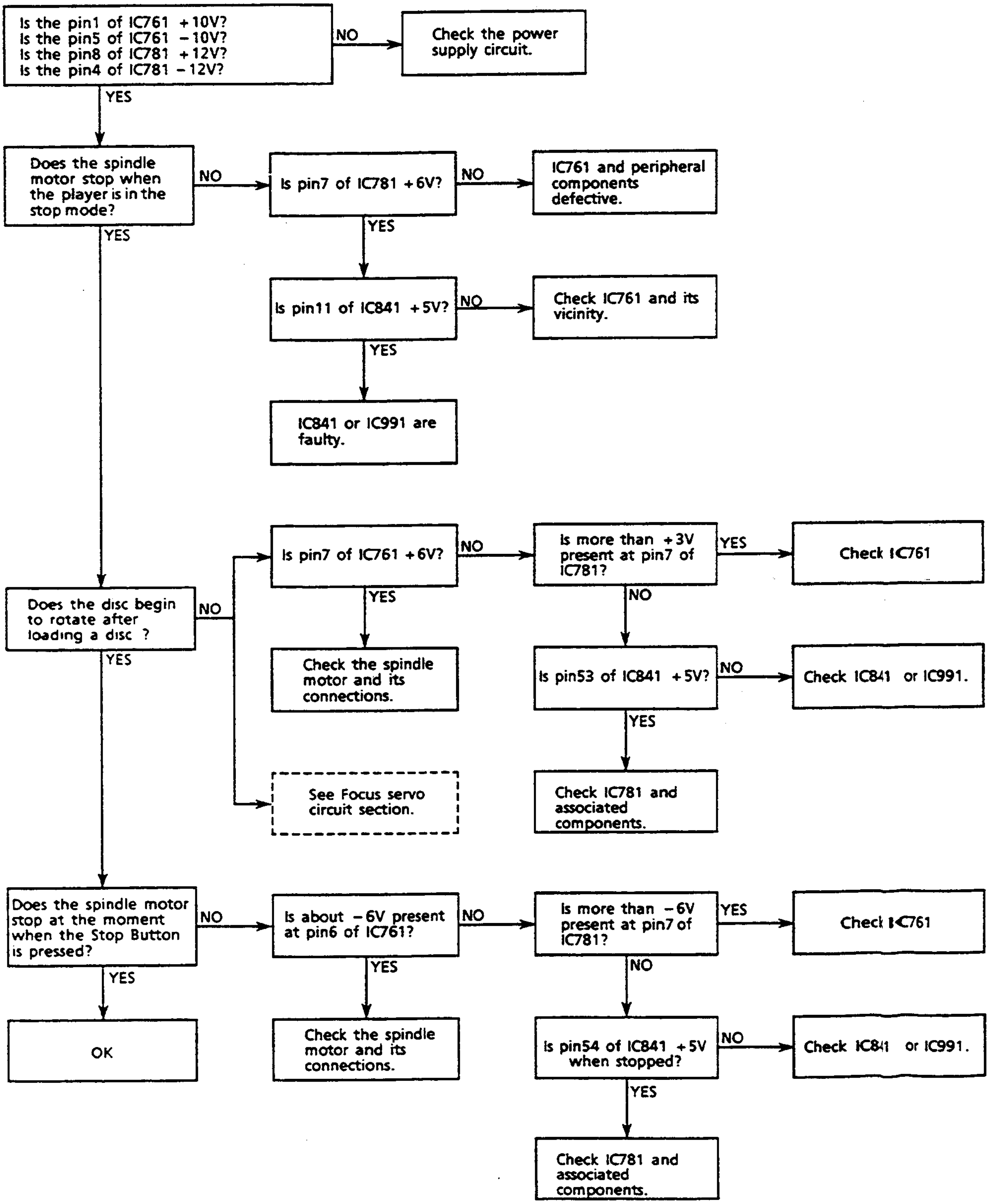
Tracking circuit section


Is the C703 ⊕ +12V?
Is the C704 ⊖ −12V?
Is the collector of Q801 +10V?
Is the collector of Q802 −10V?
NO
Check the power supply circuit.
YES
Can it read the TOC?
NO
YES
Can it adjust tracking offset and tracking gain correctly?
NO
Check the pickup, IC801 and the connection of the pickup.
YES
Does the pickup move to the inner side of the disc when the disc tray is closed and then does the lens move upward?
NO
Is the drive signal observed at the emitter of Q801 and Q802 after loading a disc?
YES
NO
Check IC803, Q801, Q802 and associated components.
Check the pickup and the connections of the pickup.
YES
Can it read TOC when R828 is shorted?
NO
YES
Check IC991, IC841.
OK
Check IC803, Q804 and associated components.
At the play mode, manual search signals generate at pin22 (or pin23) of IC841 when the ▶▶ button (or ◀◀ button) is pressed?
NO
Check IC841, IC991 and the vicinity of the keys.
YES
Do auto search functions work correctly?
YES
OK
NO
Adjust tracking offset, and tracking gain.
Short the TP7 (TEST) to TP5 GND and start to play. Is the pulse waveform observed at IC802 pin13 and pin 14?
YES
Is the pulse present at IC841 pin19 when performing auto search operation?
NO
YES
Check the pickup and feed servo circuit.
NO
IC802 Q711, Q712 and Q713 and associated components are defective.

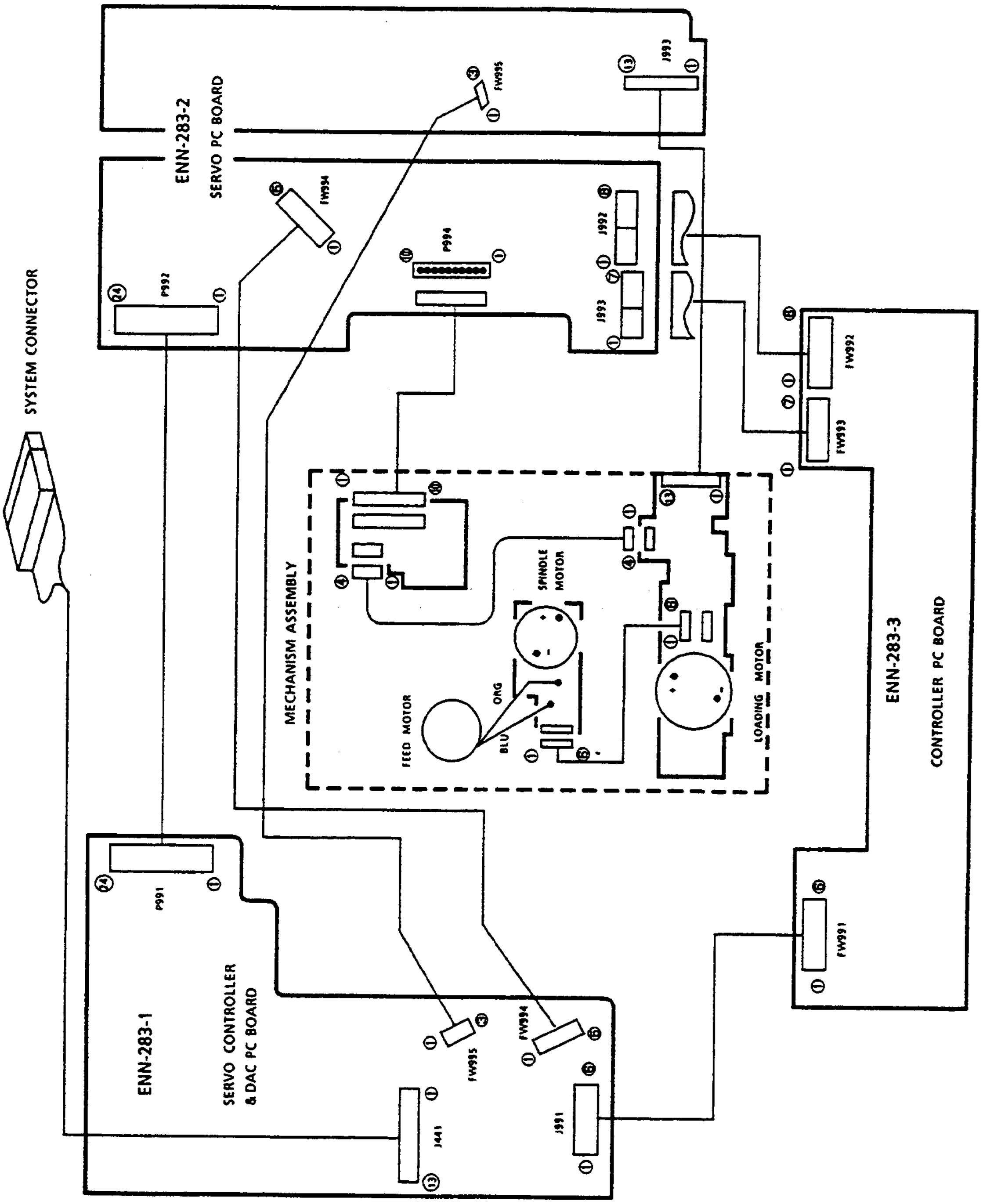
Feed circuit section


Is the pin8 of IC762 +12V?
Is the pin4 of IC762 −12V?
Is the pin1 of IC761 +10V?
Is the pin5 of IC761 −10V?
NO
Check the power supply circuit.
YES
Can it read the TOC?
NO
Is the pickup at the inner track of the disc?
YES
Check REST Switch, IC991 and their connections.
YES
NO
Do auto search functions work correctly?
YES
OK
Is pin8 of IC761 −6V?
NO
Is pin26 of IC841 +5V?
NO
NO
YES
YES
At the play mode, are manual search signals generated at pin25 (or pin26) of IC841 when the ▶▶| button (or |◀◀ button), and is pin24 of IC841 0V?
NO
Check IC841, IC991 and their connections.
Check the feed motor and connections.
Check IC761, IC762 and Q761.
YES
Check the ftracking servo circuit, IC761, IC762, Q761, R769 and associated components.
Check IC841, IC991 and associated components.

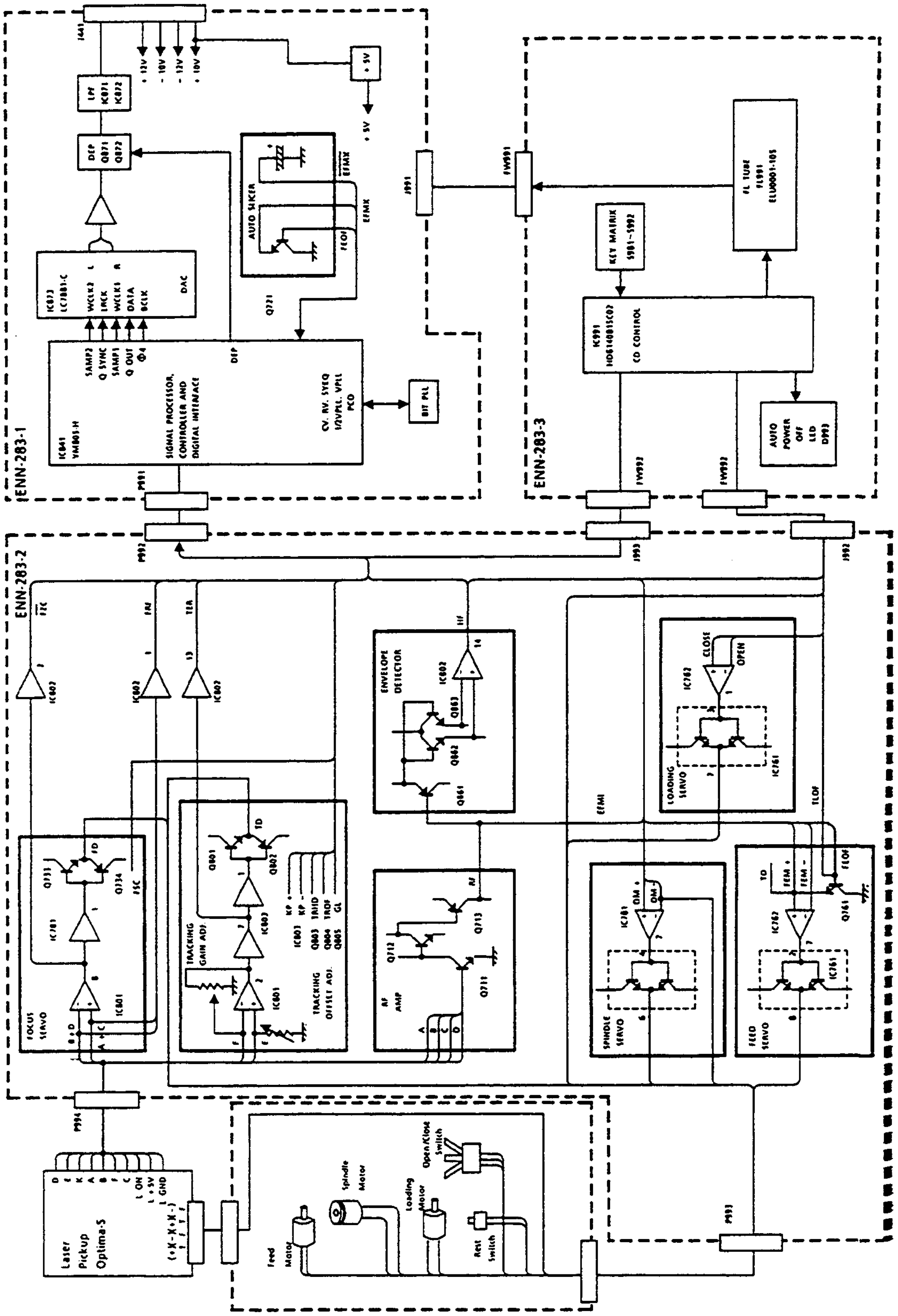
Spindle circuit section


Is the pin1 of IC761 +10V?
Is the pin5 of IC761 −10V?
Is the pin8 of IC781 +12V?
Is the pin4 of IC781 −12V?
NO
Check the power supply circuit.
YES
Does the spindle motor stop when the player is in the stop mode?
NO
Is pin7 of IC781 +6V?
NO
IC761 and peripheral components defective.
YES
Is pin11 of IC841 +5V?
NO
Check IC761 and its vicinity.
YES
IC841 or IC991 are faulty.
YES
Does the disc begin to rotate after loading a disc ?
NO
Is pin7 of IC761 +6V?
NO
Is more than +3V present at pin7 of IC781?
YES
Check IC761
NO
Is pin53 of IC841 +5V?
NO
Check IC841 or IC991.
YES
Check IC781 and associated components.
YES
Check the spindle motor and its connections.
See Focus servo circuit section.
YES
Does the spindle motor stop at the moment when the Stop Button is pressed?
NO
Is about −6V present at pin6 of IC761?
NO
Is more than −6V present at pin7 of IC781?
YES
Check IC761
NO
Is pin54 of IC841 +5V when stopped?
NO
Check IC841 or IC991.
YES
Check IC781 and associated components.
YES
Check the spindle motor and its connections.
YES
OK

Connection Diagram


ENN-283-2
SERVO PC BOARD
FW995
J993
FW994
P994
J992
J993
P992
SYSTEM CONNECTOR
MECHANISM ASSEMBLY
SPINDLE MOTOR
FEED MOTOR
ORG
BLU
LOADING MOTOR
ENN-283-3
CONTROLLER PC BOARD
FW992
FW993
FW991
ENN-283-1
SERVO CONTROLLER & DAC PC BOARD
P991
FW995
FW994
J441
J991

Block Diagram


ENN-283-1
J441
+12V
-10V
-12V
+10V
+5V
LPF IC871 IC872
DEF Q871 Q872
IC833 LC7883-C
WCLK2
LRCK
WCLK1
DATA
BCLK
L
R
DAC
AUTO SLICER
EFMX
EFMX
FEOI
Q721
IC841 YM801-H
SAMP2
Q SYNC
SAMP1
Q OUT
Φ4
SIGNAL PROCESSOR, CONTROLLER AND DIGITAL INTERFACE
DEF
CV, RV, SYEQ
1/2VPLL, VPLL
PCO
BIT PLL
P991
J991
FW991
ENN-283-3
KEY MATRIX S981~S992
FL TUBE FL991 ELU0001-105
IC991 HD614081SC02
CD CONTROL
AUTO POWER OFF LED D993
FW992
FW992
ENN-283-2
P992
J993
J992
ITC
FN
TER
IC802
IC802
IC802
ENVELOPE DETECTOR
IC802
Q863
Q862
Q861
LF
IC762
CLOSE
OPEN
LOADING SERVO
IC761
EFMI
TLOF
FOCUS SERVO
Q733
Q734
FD
FSC
IC781
IC801
B+D
A+C
TRACKING GAIN ADJ
Q801
Q802
TD
IC802
IC801
KP+
KP-
TAIID
TROF
GL
IC803
Q803
Q804
Q805
TRACKING OFFSET ADJ
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RF AMP
RF
Q712
Q713
Q711
A
B
C
D
SPINDLE SERVO
IC781
DM+
DM-
FEED SERVO
TD
FEM+
FEM-
FLOF
IC762
IC761
Q761
P994
D
E
K
A
B
F
C
L ON
+5V
GND
(+X-X+Y-Y)
Laser Pickup Optima-5
Feed Motor
Spindle Motor
Loading Motor
Open/Close Switch
Rest Switch
P993

PARTS LIST

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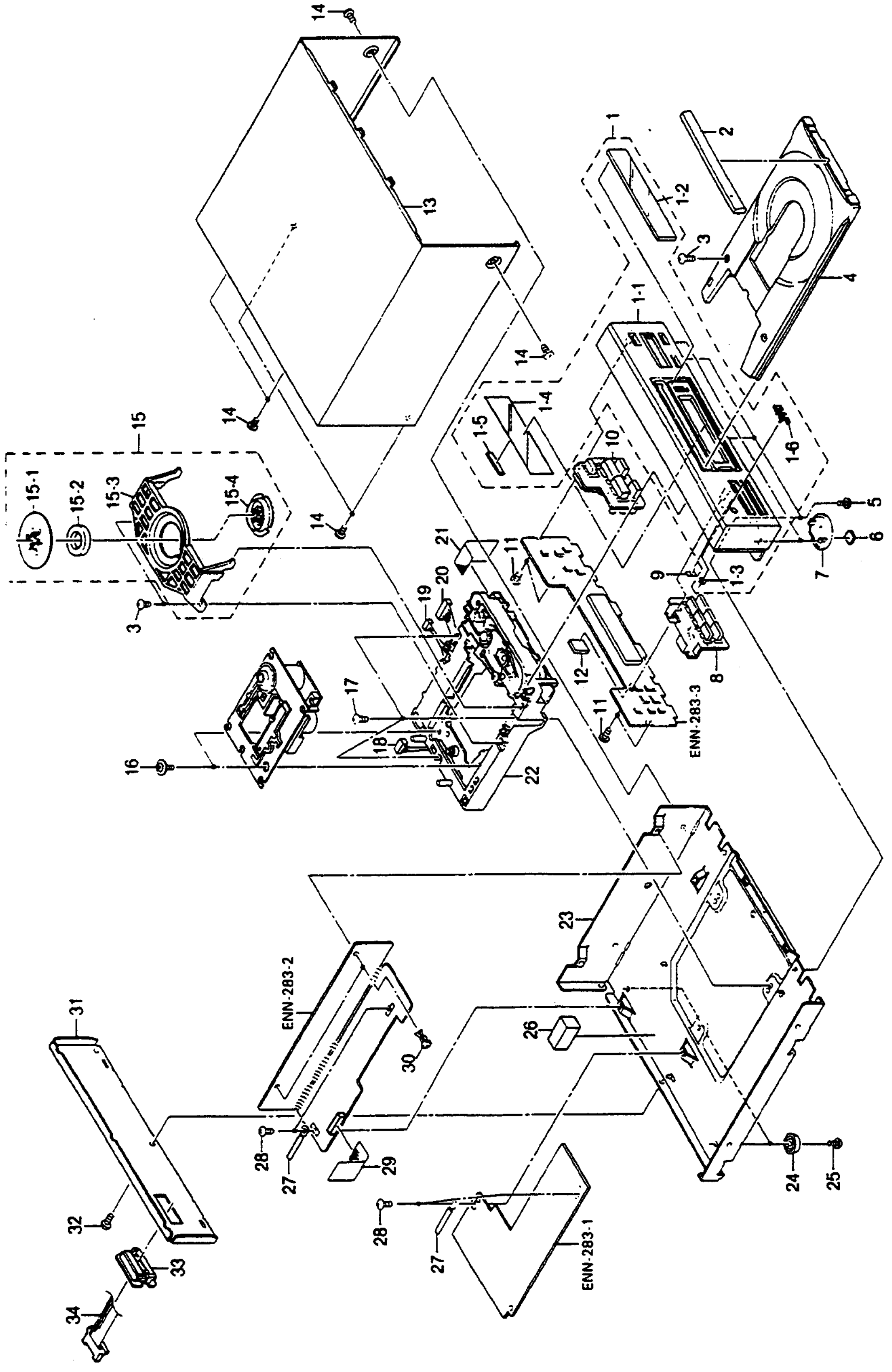
  ■ENN-283☐ Main PC Board Ass'y 2-6

General Exploded View and Parts List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■ Parts List

⚠	Item	Part Number	Part Name	Q'ty	Description	Areas
	1	EFP-XLMX70BKE (S	Front Panel Ass'y	1		
	1-1	E102328-005	Front Panel	1		
	1-2	E306949-003	Window Screen	1		
	1-3	E60912-003	Speed Nut	1		
	1-4	E70561-027	FL Screen	1		
	1-5	EXO035003R10S13	Spacer	1		
	1-6	PQ42561	JVC Mark	1		
	2	E306947-003	Fitting	1		
	3	SBSF3008M	Screw	3		
	4	E12289-005	Tray	1		
	5	SDSG3006M	Screw	3		
	6	E75896-001	Spacer	2	for Foot (Front)	
	7	E306935-001	Foot	2	Front	
	8	E306943-002	Push Button	1	POWER	
	9	E406091-001	Indicator	1		
	10	E306945-002	Push Button	1	CD PLAY	
	11	SDSF2608Z	Screw	4		
	12	E3400-431	Spacer	1		
	13	E206817-001	Metal Cover	1		
	14	SDSG3008M	Screw	6		
	15	E306837-003	Clamper Base Ass'y	1		
	15-1	E306836-003	Yoke	1		
	15-2	E74897-002	Magnet	1		
	15-3	E26756-001	Clamper Base	1		
	15-4	E306835-001	Clamper	1		
	16	E75871-003	Special Screw	2		
	17	SBST3006Z	Screw	3		
	18	EWS256-B102	Socket Wire Ass'y	1	6Pin	
	19	EWS254-B103	Socket Wire Ass'y	1	4Pin	
	20	EWS25A-B102	Socket Wire Ass'y	1	10Pin	
	21	EWR1DE-10TT	Flat Cable	1		
	22	—	CD Mechanism Unit Ass'y	1	See page 2-4	
	23	E102330-001	Chassis Base	1		
	24	E47227-023	Foot	2	Rear	
	25	SBSG3008N	Screw	2	for Foot (Rear)	
	26	E306805-027	Spacer	1		
	27	E72018-001	Wire Clamp	2		
	28	SBSG3008CC	Screw	4		
	29	EWR1QE-11TT	Flat Wire	1	24Pin	
	30	E48729-008	Plastic Rivet	2		
	31	E206815-011	Rear Panel	1		J
		E206815-012	Rear Panel	1		C,A,U
		E206815-013	Rear Panel	1		Except J,C,A,U
	32	SBSG3008M	Screw	1		
	33	E305920-001	Cord Holder	1		
	34	EWP902-020	Plug Cord Ass'y	1	JB441	
	–	E61029-009	Number Label	1		
	–	E406507-001	Caution Label	1		Except J
	–	E70891-001	Class 1 Label	1		Except J,C

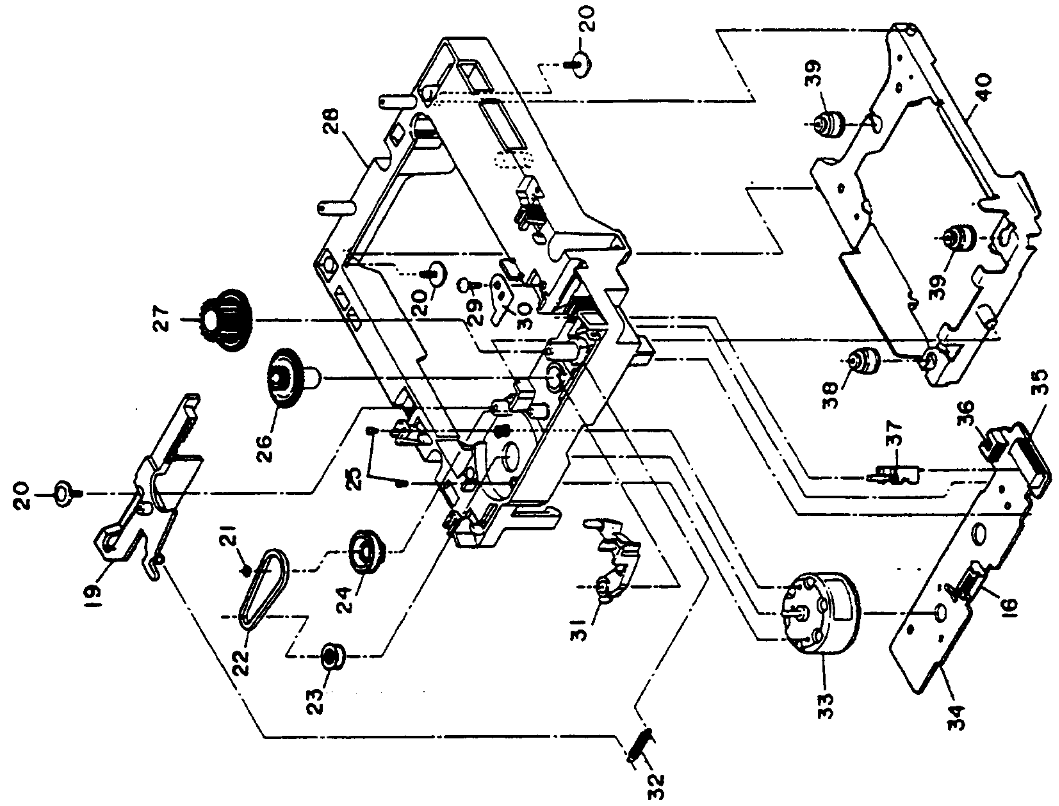
The Marks for Designated Areas

⚠ Safety Parts

J··················the U.S.A.	G··················Germany
C··················Canada	BS··················the U.K.
A··················Australia	GI··················Italy
E,EF··················Continental Europe	U··················Universal Type

No mark indicates all areas.

CD Mechanism Ass'y and Parts List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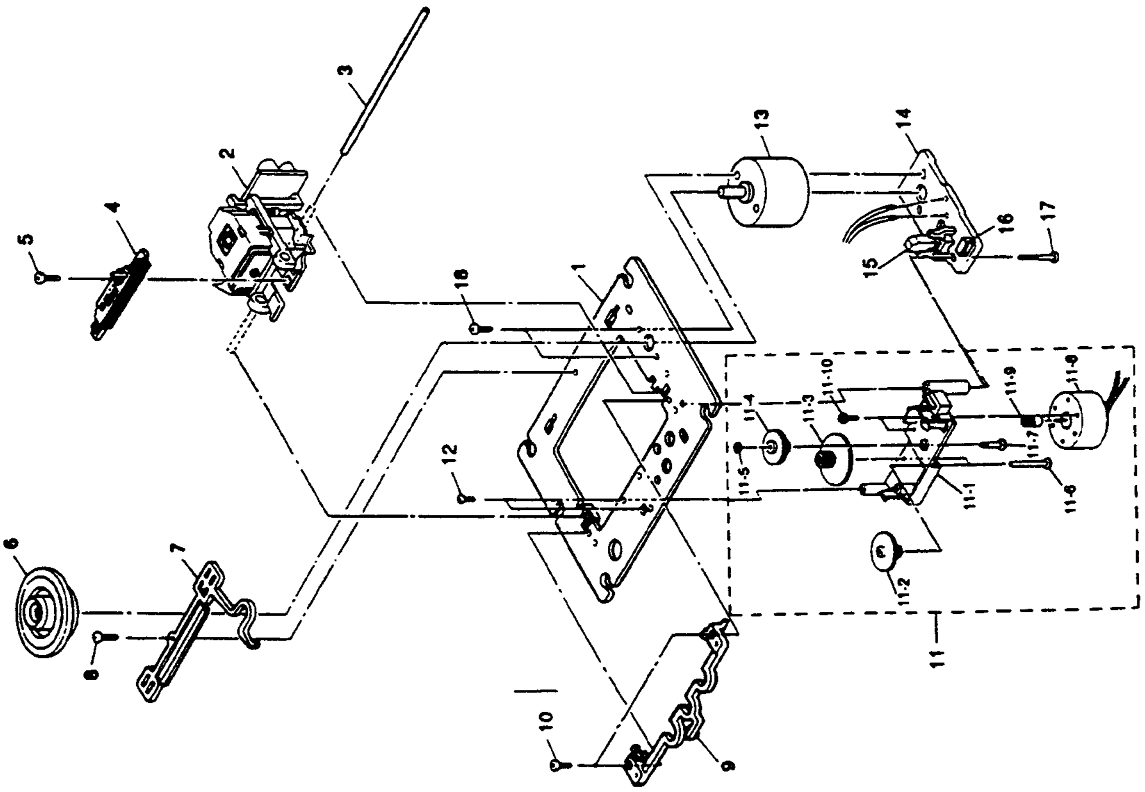
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9

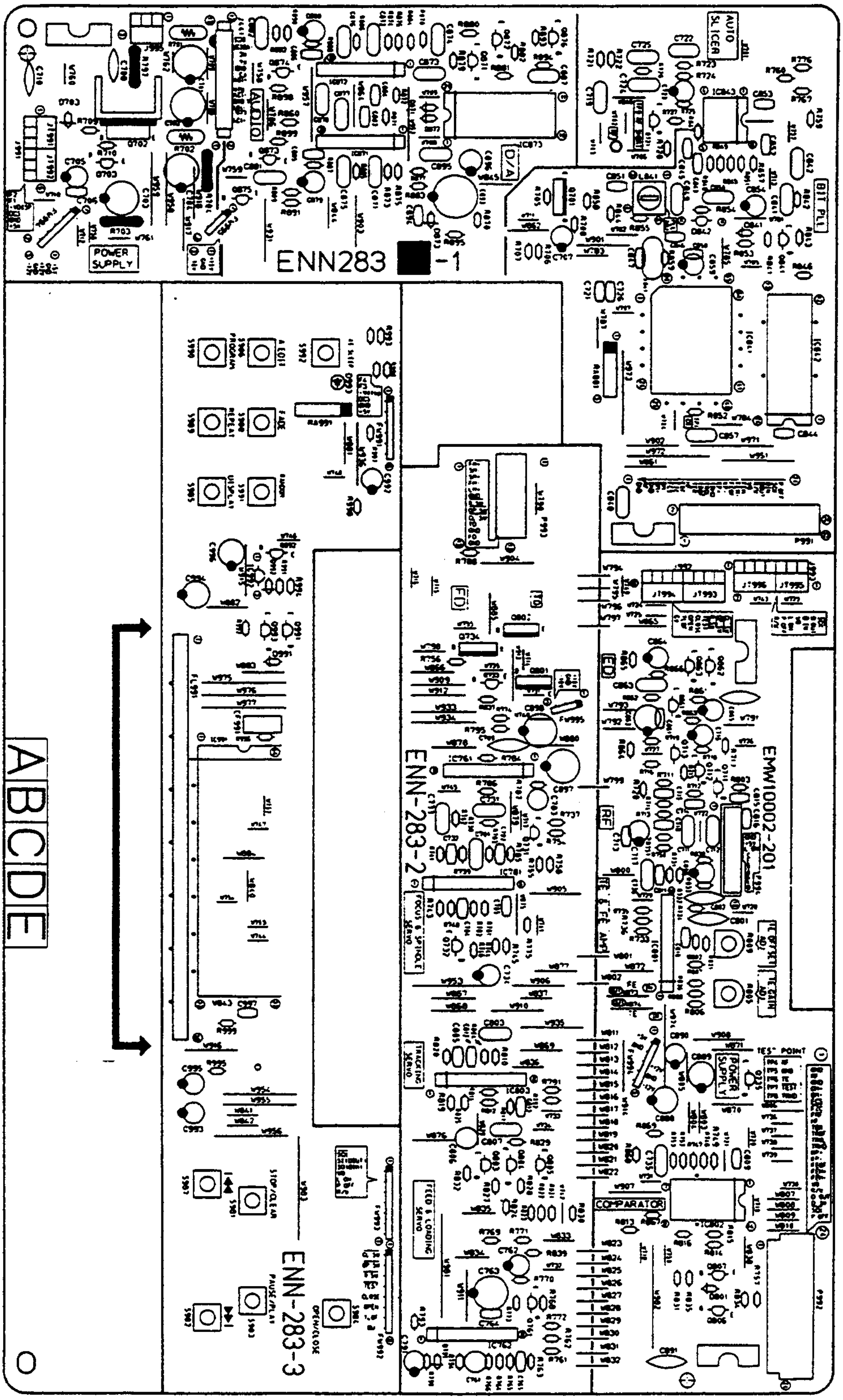
■ Parts List

Item	Part Number	Part Name	Q'ty	Description	Areas
1	E26487-003	Mechanism Base	1		
2	OPTIMA-5S	Pick up Ass'y	1		
3	E74930-003	Shaft	1		
4	E306282-001	Rack Ass'y	1		
5	SPSH2050M	Screw	1		
6	E406064-002	Turn Table Ass'y	1		
7	E306275-003	Support	1		
8	SDST2005Z	Screw	1		
9	E306277-001	Holder	1		
10	SDST2004Z	Screw	2		
11	SE10351-11	Gear Ass'y	1		
11-1	E306276-001	Gear Base	1		
11-2	E75444-001	Gear	1		
11-3	E75443-001	Gear	1		
11-4	E75445-001	Gear	1		
11-5	WDM163550	Slit Washer	1		
11-6	E75494-003	Shaft	2		
11-7	E75494-002	Shaft	1		
11-8	HKN-3A6RDNV	Feed Motor	1		
11-9	E75493-001	Pinion Gear	1		
11-10	LPSH1735Z	Screw	2		
12	E72713-001	Special Screw	2		
13	E74539-001B	Spindle Motor	1		
14	E12114-005 (S)	Circuit Board	1		
15	ESB1100-005	Leaf Switch	1	S001	
16	EMV5109-006B	6P Plug Ass'y	2	P011	
17	E75832-001	Special Screw	1		
18	SDSP2003N	Screw	2		
19	E306834-001	Cam	1		
20	E65923-003	Special Screw	3		
21	E72024-001	Speed Nut	1		
22	E75950-002	Belt	1		
23	E75984-001	Motor Pulley	1		
24	E75985-001	Gear (1)	1		
25	SPSK2640Z	Screw	2		
26	E75986-002	Gear (2)	1		
27	E75987-001	Gear (3)	1		
28	E12288-002	Loading Base	1		
29	SBSF3008Z	Screw	1		
30	E75988-001	Plate	1		
31	E306833-001	Lever	1		
32	E75989-001	Spring	1		
33	RF-500TB-12560	Loading Motor	1		
34	EMW10045-001 (S)	Circuit Board	1		
35	EMV7123-013R	Connector	1	13PIN	
36	EMV5109-004B	Plug Ass'y	1	4PIN	
37	ESS1200-002	Switch	1		
38	E75609-002	Insulator	1		
39	E75609-001	Insulator	2		
40	E307087-001	Elevator Base Ass'y	1		

Printed Circuit Board Ass'y and Parts List

■ENN-283☐ Main PC Board Ass'y

Note : ENN-283☐ varies according to the areas employed. See note (1) when placing an order.


ENN283■-1
ENN-283-2
ENN-283-3
EMW10002-201
A
B
C
D
E
POWER SUPPLY
AUTO SLICER
D/A
BIT PLL
COMPARATOR
TEST POINT
FOCUS & SPINDLE SERVO
TRACKING SERVO
FEED & LOADING SERVO
PROGRAM
REPEAT
DISPLAY
EDIT
FADE
STOP/CLEAR
PAUSE/PLAY
OPEN/CLOSE

Note (1)

PC Board Ass'y	Designated Areas
ENN-283 D	the U.S.A., Canada
ENN-283 E	Australia, the U.K. Continental Europe Universal Type
ENN-283 F	Germany, Italy

Transistors

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	Q701	2SB1357(E,F)	SILICON ROHM	
	Q702	2SB1187(E,F)	SILICON ROHM	
	Q703	2SC1740(R,S)	SILICON ROHM	
	Q711	2SC535(B,C)	SILICON HITACHI	
	Q712	2SC1740S(R,S)	SILICON ROHM	
	Q713	2SA933S(R,S)	SILICON ROHM	
	Q721	2SD2144S(VW)	SILICON ROHM	
	Q731	2SD2144S(VW)	SILICON ROHM	
	Q732	2SA933S(R,S)	SILICON ROHM	
	Q733	2SC2060(Q,R)	SILICON ROHM	
	Q734	2SB1357(E,F)	SILICON ROHM	
	Q735	DTA144WS	SILICON ROHM	
	Q761	2SD2144S(VW)	SILICON ROHM	
	Q801	2SD2037(E,F)	SILICON ROHM	
	Q802	2SB1357(E,F)	SILICON ROHM	
	Q803	2SD2144S(VW)	SILICON ROHM	
	Q804	2SD2144S(VW)	SILICON ROHM	
	Q805	2SD2144S(VW)	SILICON ROHM	
	Q806	2SA933S(R,S)	SILICON ROHM	
	Q807	2SC1740S(R,S)	SILICON ROHM	
	Q841	2SD2144S(VW)	SILICON ROHM	
	Q861	2SA933S(R,S)	SILICON ROHM	
	Q862	2SC1740S(R,S)	SILICON ROHM	
	Q863	2SC1740S(R,S)	SILICON ROHM	
	Q871	2SD2144S(VW)	SILICON ROHM	
	Q872	2SD2144S(VW)	SILICON ROHM	
	Q876	DTA114YS	SILICON ROHM	
	Q991	DTA114YS	SILICON ROHM	
	Q992	DTC114YS	SILICON ROHM	
	Q993	DTC114YS	SILICON ROHM	

⚠ : SAFETY PARTS

I. C. s

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	IC761	STA341M(A)	I.C. SANKEN	
	IC762	VC4580L	I.C. DAINICHI	
	IC781	VC4580L	I.C. DAINICHI	
	IC801	TL072S	I.C. DAINICHI	
	IC802	BA10339	I.C. ROHM	
	IC803	VC4580L	I.C. DAINICHI	
	IC841	YM3805-H	I.C. YAMAHA	
	IC842	LC3517BS-15	I.C. SANYO	
	IC843	M5209P	I.C. MITSUBISHI	
	IC871	XRA15218N	I.C. EXAR JAPAN	
	IC872	XRA15218N	I.C. EXAR JAPAN	
	IC873	LC7881-C	I.C. SANYO	
	IC991	HD404019RB14S	I.C. HITACHI	
	IC992	MN1281(P,Q)	I.C. MATSUSHITA	

⚠ : SAFETY PARTS

Diodes

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	D703	MTZ5.6JC	ZENER ROHM	
	D791	1SS133	SILICON ROHM	
	D801	1SS133	SILICON ROHM	
	D841	MTZ5.1JB	ZENER ROHM	
	D842	SVC321-AW	VARICAP SANYO	
	D871	1SS133	SILICON ROHM	
	D872	1SS133	SILICON ROHM	
	D873	MTZ5.1JB	ZENER ROHM	
	D991	1SS133	SILICON ROHM	
	D992	1SS133	SILICON ROHM	
	D993	SLH-34VC3F	L.E.D. ROHM	

⚠ : SAFETY PARTS

Capacitors

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	C701	QETB1CM-227	220MF 16V ELECTRO	
	C702	QETB1CM-227	220MF 16V ELECTRO	
	C703	QETB1CM-227	220MF 16V ELECTRO	
	C704	QETB1CM-227	220MF 16V ELECTRO	
	C705	QETB1CM-476	47MF 16V ELECTRO	
	C706	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C707	QETB1AM-227	220MF 10V ELECTRO	
	C708	QCF21HP-223	0.022MF 50V CERAMIC	
	C709	QCF21HP-223	0.022MF 50V CERAMIC	
	C711	QFLB1HJ-472	4700PF 50V MYLAR	
	C712	QFLB1HJ-472	4700PF 50V MYLAR	
	C713	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C714	QCSB1HK-3R9	3.9PF 50V CERAMIC	
	C715	QCBB1HK-471	470PF 50V CERAMIC	
	C716	QETB1EM-106	10MF 25V ELECTRO	
	C717	QETB1CM-476	47MF 16V ELECTRO	
	C718	QCSB1HJ-680	68PF 50V CERAMIC	
	C719	QFV81HJ-154	0.15MF 50V T.FILM	
	C721	QCSB1HJ-470	47PF 50V CERAMIC	
	C722	QFV81HJ-103	0.01MF 50V T.FILM	
	C723	QETB1EM-106	10MF 25V ELECTRO	
	C724	QFV81HJ-473	0.047MF 50V T.FILM	
	C725	QFV81HJ-474	0.47MF 50V T.FILM	
	C726	QCSB1HJ-180	18PF 50V CERAMIC	
	C731	QFV81HJ-183	0.018MF 50V T.FILM	
	C732	QCBB1HK-271	270PF 50V CERAMIC	
	C733	QFV81HJ-393	0.039MF 50V T.FILM	
	C734	QETB1CM-226	22MF 16V ELECTRO	
	C735	QFV81HJ-104	0.1MF 50V T.FILM	
	C736	QFV81HJ-224	0.22MF 50V T.FILM	
	C761	QEN51HM-225	2.2MF 50V NON POLE	
	C762	QETB1EM-226	22MF 25V ELECTRO	
	C763	QETB0JM-227	220MF 6.3V ELECTRO	
	C764	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C765	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C781	QFLB1HJ-272	2700PF 50V MYLAR	
	C782	QCBB1HK-101	100PF 50V CERAMIC	
	C783	QEN51HM-225	2.2MF 50V NON POLE	
	C784	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C785	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C791	QETB1HM-475	4.7MF 50V ELECTRO	
	C801	QCT26CH-151	150PF 50V CERAMIC	
	C802	QCT26CH-121	120PF 50V CERAMIC	
	C803	QFV81HJ-223	0.022MF 50V T.FILM	
	C805	QCSB1HK-4R7	4.7PF 50V CERAMIC	
	C806	QEN51HM-225	2.2MF 50V NON POLE	
	C807	QFV81HJ-563	0.056MF 50V T.FILM	
	C808	QETB1CM-476	47MF 16V ELECTRO	
	C809	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C810	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C811	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C812	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C813	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C815	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C816	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C841	QFV81HJ-103	0.01MF 50V T.FILM	
	C842	QFV81HJ-474	0.47MF 50V T.FILM	
	C843	QCGB1HK-102	1000PF 50V CERAMIC	
	C844	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C845	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C846	QCSB1HJ-100	10PF 50V CERAMIC	
	C847	QCSB1HJ-100	10PF 50V CERAMIC	
	C848	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C849	QFP81HJ-151	150PF 50V POLY	
	C850	QFP81HJ-471	470PF 50V POLY	
	C851	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C852	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C853	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C854	QETB1HM-474	0.47MF 50V ELECTRO	
	C857	QFV81HJ-124	0.12MF 50V T.FILM	
	C858	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C859	QETB1AM-107	100MF 10V ELECTRO	
	C861	QCBB1HK-101	100PF 50V CERAMIC	
	C862	QETB1CM-107	100MF 16V ELECTRO	
	C863	QFV81HJ-473	0.047MF 50V T.FILM	
	C864	QETB1EM-106	10MF 25V ELECTRO	
	C865	QETB1HM-105	1MF 50V ELECTRO	
	C871	QFLB1HJ-392	3900PF 50V MYLAR	
	C872	QFLB1HJ-392	3900PF 50V MYLAR	
	C873	QFV81HJ-683	0.068MF 50V T.FILM	
	C874	QFV81HJ-683	0.068MF 50V T.FILM	
	C875	QFV81HJ-103	0.01MF 50V T.FILM	
	C876	QFV81HJ-103	0.01MF 50V T.FILM	
	C877	QFLB1HJ-222	2200PF 50V MYLAR	
	C878	QFLB1HJ-222	2200PF 50V MYLAR	
	C879	EEZ2505-476	47MF ELECTRO	
	C880	EEZ2505-476	47MF ELECTRO	
	C881	QFLB1HJ-562	5600PF 50V MYLAR	
	C882	QFLB1HJ-562	5600PF 50V MYLAR	
	C883	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C884	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C885	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C886	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C887	QFLB1HJ-102	1000PF 50V MYLAR	
	C888	QETB1CM-107	100MF 16V ELECTRO	

⚠ : SAFETY PARTS

Capacitors

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	C889	QETB1CM-107	100MF 16V ELECTRO	
	C890	QETB1AM-107	100MF 10V ELECTRO	
	C891	QCF21HP-223	0.022MF 50V CERAMIC	
	C893	EEZ2503-107	100MF ELECTRO	
	C894	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C895	QFV81HJ-124	0.12MF 50V T.FILM	
	C896	QETB1AM-107	100MF 10V ELECTRO	
	C897	QETB1CM-107	100MF 16V ELECTRO	
	C898	QETB1CM-107	100MF 16V ELECTRO	
	C992	QETB1HM-475	4.7MF 50V ELECTRO	
	C993	QER61HM-475	4.7MF 50V ELECTRO	
	C994	QEK51HM-226	22MF 50V ELECTRO	
	C995	QER50JM-107	100MF 6.3V ELECTRO	
	C996	QETB1AM-227	220MF 10V ELECTRO	
	C997	QCHB1EZ-223	0.022MF 25V CERAMIC	

⚠ : SAFETY PARTS

Resistors

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
⚠	R701	PTH61G308D2R2N	FUSIBLE	D
⚠	R701	PTH61G25AR4R7M	FUSIBLE	E
⚠	R701	PTH61G25AR4R7M	FUSIBLE	F
⚠	R702	PTH61G308D2R2N	FUSIBLE	D
⚠	R702	PTH61G25AR4R7M	FUSIBLE	E
⚠	R702	PTH61G25AR4R7M	FUSIBLE	F
⚠	R703	QRZ0077-100	10 1/4W FUSIBLE	
⚠	R704	QRZ0077-100	10 1/4W FUSIBLE	
	R705	QRD167J-472	4.7K 1/6W CARBON	
	R706	QRD167J-472	4.7K 1/6W CARBON	
	R708	QRD167J-222	2.2K 1/6W CARBON	
	R709	QRD167J-122	1.2K 1/6W CARBON	
	R710	QRD167J-121	120 1/6W CARBON	
	R711	QRD167J-183	18K 1/6W CARBON	
	R712	QRD167J-432	4.3K 1/6W CARBON	
	R713	QRD167J-391	390 1/6W CARBON	
	R714	QRD167J-221	220 1/6W CARBON	
	R715	QRD167J-152	1.5K 1/6W CARBON	
	R716	QRD167J-561	560 1/6W CARBON	
	R717	QRD167J-561	560 1/6W CARBON	
	R718	QRD167J-562	5.6K 1/6W CARBON	
	R719	QRD167J-152	1.5K 1/6W CARBON	
	R720	QRD167J-271	270 1/6W CARBON	
	R721	QRD167J-471	470 1/6W CARBON	
	R722	QRD167J-472	4.7K 1/6W CARBON	
	R723	QRD167J-154	150K 1/6W CARBON	
	R724	QRD167J-562	5.6K 1/6W CARBON	
	R725	QRD167J-103	10K 1/6W CARBON	
	R726	QRD167J-104	100K 1/6W CARBON	
	R727	QRD167J-183	18K 1/6W CARBON	
	R728	QRD167J-562	5.6K 1/6W CARBON	
	R731	QRD167J-104	100K 1/6W CARBON	
	R732	QRD167J-104	100K 1/6W CARBON	
	R733	QRD167J-394	390K 1/6W CARBON	
	R734	QRD167J-394	390K 1/6W CARBON	
	R735	QRD167J-121	120 1/6W CARBON	
	R736	QRD167J-182	1.8K 1/6W CARBON	
	R737	QRD167J-681	680 1/6W CARBON	
	R738	QRD167J-473	47K 1/6W CARBON	
	R739	QRD167J-331	330 1/6W CARBON	
	R740	QRD167J-333	33K 1/6W CARBON	
	R741	QRD167J-273	27K 1/6W CARBON	
	R742	QRD167J-394	390K 1/6W CARBON	
	R743	QRD167J-105	1M 1/6W CARBON	
	R744	QRD167J-470	47 1/6W CARBON	
	R745	QRD167J-473	47K 1/6W CARBON	
	R746	QRD167J-272	2.7K 1/6W CARBON	
	R747	QRD167J-682	6.8K 1/6W CARBON	
	R748	QRD167J-104	100K 1/6W CARBON	
	R749	QRD167J-562	5.6K 1/6W CARBON	
	R750	QRD167J-105	1M 1/6W CARBON	
	R751	QRD167J-105	1M 1/6W CARBON	
	R752	QRD167J-104	100K 1/6W CARBON	
	R753	QRD167J-562	5.6K 1/6W CARBON	
	R754	QRD167J-104	100K 1/6W CARBON	
	R755	QRD167J-103	10K 1/6W CARBON	
	R756	QRD167J-470	47 1/6W CARBON	
	R757	QRD167J-183	18K 1/6W CARBON	
	R758	QRD167J-183	18K 1/6W CARBON	
	R759	QRD167J-681	680 1/6W CARBON	
	R760	QRD167J-681	680 1/6W CARBON	
	R761	QRD167J-564	560K 1/6W CARBON	
	R762	QRD167J-224	220K 1/6W CARBON	
	R763	QRD167J-393	39K 1/6W CARBON	
	R764	QRD167J-224	220K 1/6W CARBON	
	R765	QRD167J-562	5.6K 1/6W CARBON	
	R766	QRD167J-392	3.9K 1/6W CARBON	
	R767	QRD167J-681	680 1/6W CARBON	
	R768	QRD167J-103	10K 1/6W CARBON	
	R769	QRD167J-102	1K 1/6W CARBON	
	R770	QRD167J-471	470 1/6W CARBON	
	R771	QRD167J-683	68K 1/6W CARBON	
	R772	QRD167J-183	18K 1/6W CARBON	
	R773	QRD167J-273	27K 1/6W CARBON	
	R774	QRD167J-470	47 1/6W CARBON	

⚠ : SAFETY PARTS

Resistors

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
	R775	QRD167J-335	3.3M 1/6W CARBON	
	R776	QRD167J-681	680 1/6W CARBON	
	R781	QRD167J-684	680K 1/6W CARBON	
	R782	QRD167J-684	680K 1/6W CARBON	
	R783	QRD167J-823	82K 1/6W CARBON	
	R784	QRD167J-470	47 1/6W CARBON	
	R785	QRD167J-683	68K 1/6W CARBON	
	R786	QRD167J-123	12K 1/6W CARBON	
	R787	QRD167J-152	1.5K 1/6W CARBON	
	R788	QRD167J-2R2	2.2 1/6W CARBON	
	R790	QRD167J-684	680K 1/6W CARBON	
	R791	QRD167J-513	51K 1/6W CARBON	
	R792	QRD167J-513	51K 1/6W CARBON	
	R793	QRD167J-683	68K 1/6W CARBON	
	R794	QRD167J-683	68K 1/6W CARBON	
	R795	QRD167J-221	220 1/6W CARBON	
⚠	R797	QRZ0077-4R7	4.7 1/4W FUSIBLE	
	R801	QRD167J-563	56K 1/6W CARBON	
	R802	QRD167J-563	56K 1/6W CARBON	
	R803	QRD167J-222	2.2K 1/6W CARBON	
	R804	QRD167J-681	680 1/6W CARBON	
	R805	QVPA601-202A	2K VARIABLE	
	R806	QRD167J-561	560 1/6W CARBON	
	R807	QRD167J-334	330K 1/6W CARBON	
	R808	QRD167J-222	2.2K 1/6W CARBON	
	R809	QVPA601-154A	150K VARIABLE	
	R810	QRD167J-223	22K 1/6W CARBON	
	R811	QRD167J-682	6.8K 1/6W CARBON	
	R812	QRD167J-103	10K 1/6W CARBON	
	R813	QRD167J-562	5.6K 1/6W CARBON	
	R814	QRD167J-562	5.6K 1/6W CARBON	
	R815	QRD167J-562	5.6K 1/6W CARBON	
	R816	QRD167J-562	5.6K 1/6W CARBON	
	R817	QRD167J-183	18K 1/6W CARBON	
	R819	QRD167J-103	10K 1/6W CARBON	
	R820	QRD167J-224	220K 1/6W CARBON	
	R821	QRD167J-103	10K 1/6W CARBON	
	R822	QRD167J-183	18K 1/6W CARBON	
	R823	QRD167J-434	430K 1/6W CARBON	
	R824	QRD167J-434	430K 1/6W CARBON	
	R825	QRD167J-103	10K 1/6W CARBON	
	R827	QRD167J-104	100K 1/6W CARBON	
	R828	QRD167J-104	100K 1/6W CARBON	
	R829	QRD167J-681	680 1/6W CARBON	
	R830	QRD167J-183	18K 1/6W CARBON	
	R831	QRD167J-104	100K 1/6W CARBON	
	R832	QRD167J-102	1K 1/6W CARBON	
	R833	QRD167J-562	5.6K 1/6W CARBON	
	R834	QRD167J-183	18K 1/6W CARBON	
	R835	QRD167J-183	18K 1/6W CARBON	
	R836	QRD167J-394	390K 1/6W CARBON	
	R837	QRD167J-470	47 1/6W CARBON	
	R838	QRD167J-562	5.6K 1/6W CARBON	
	R839	QRD167J-183	18K 1/6W CARBON	
	R841	QRD167J-682	6.8K 1/6W CARBON	
	R842	QRD167J-181	180 1/6W CARBON	
	R843	QRD167J-331	330 1/6W CARBON	
	R844	QRD167J-272	2.7K 1/6W CARBON	
	R845	QRD167J-471	470 1/6W CARBON	
	R846	QRD167J-681	680 1/6W CARBON	
⚠	R847	QRV144F-1602	16K 1/4W M.FILM	
⚠	R848	QRV144F-1502	15K 1/4W M.FILM	
	R849	QRD167J-183	18K 1/6W CARBON	
	R851	QRD167J-183	18K 1/6W CARBON	
	R852	QRD167J-102	1K 1/6W CARBON	
	R853	QRD167J-152	1.5K 1/6W CARBON	
	R854	QRD167J-104	100K 1/6W CARBON	
	R855	QRD167J-821	820 1/6W CARBON	
	R857	QRD167J-471	470 1/6W CARBON	
	R858	QRD167J-682	6.8K 1/6W CARBON	
	R859	QRD167J-105	1M 1/6W CARBON	
	R861	QRD167J-103	10K 1/6W CARBON	
	R862	QRD167J-272	2.7K 1/6W CARBON	
	R863	QRD167J-102	1K 1/6W CARBON	
	R864	QRD167J-271	270 1/6W CARBON	
	R865	QRD167J-103	10K 1/6W CARBON	
	R866	QRD167J-562	5.6K 1/6W CARBON	
	R867	QRD167J-472	4.7K 1/6W CARBON	
	R868	QRD167J-822	8.2K 1/6W CARBON	
	R869	QRD167J-103	10K 1/6W CARBON	
	R870	QRD167J-101	100 1/6W CARBON	
	R871	QRD167J-472	4.7K 1/6W CARBON	
	R872	QRD167J-472	4.7K 1/6W CARBON	
	R873	QRD167J-751	750 1/6W CARBON	
	R874	QRD167J-751	750 1/6W CARBON	
	R875	QRD167J-471	470 1/6W CARBON	
	R876	QRD167J-471	470 1/6W CARBON	
	R877	QRD167J-221	220 1/6W CARBON	
	R878	QRD167J-221	220 1/6W CARBON	
	R879	QRD167J-105	1M 1/6W CARBON	
	R880	QRD167J-105	1M 1/6W CARBON	
	R881	QRD167J-392	3.9K 1/6W CARBON	
	R882	QRD167J-392	3.9K 1/6W CARBON	
	R883	QRD167J-821	820 1/6W CARBON	
	R884	QRD167J-821	820 1/6W CARBON	

⚠ : SAFETY PARTS

Resistors

Δ	ITEM	PART NUMBER	DESCRIPTION	AREA
	R885	QRD167J-821	820 1/6W CARBON	
	R886	QRD167J-821	820 1/6W CARBON	
	R887	QRD167J-272	2.7K 1/6W CARBON	
	R888	QRD167J-272	2.7K 1/6W CARBON	
	R889	QRD167J-273	27K 1/6W CARBON	
	R890	QRD167J-273	27K 1/6W CARBON	
	R891	QRD167J-561	560 1/6W CARBON	
	R892	QRD167J-561	560 1/6W CARBON	
	R893	QRD167J-104	100K 1/6W CARBON	
	R894	QRD167J-105	1M 1/6W CARBON	
	R895	QRD167J-681	680 1/6W CARBON	
	R899	QRD167J-152	1.5K 1/6W CARBON	
	R991	QRD167J-471	470 1/6W CARBON	
	R992	QRD167J-473	47K 1/6W CARBON	
	R994	QRD167J-103	10K 1/6W CARBON	
	R995	QRD167J-472	4.7K 1/6W CARBON	
	R996	QRD167J-105	1M 1/6W CARBON	
	R997	QRD167J-473	47K 1/6W CARBON	
	R998	QRD167J-331	330 1/6W CARBON	
	R999	QRD167J-472	4.7K 1/6W CARBON	
	RA801	QRB045J-472	4.7K 1/8W R.NETWORK	
	RA991	QRB045J-473	47K 1/8W R.NETWORK	

Δ : SAFETY PARTS

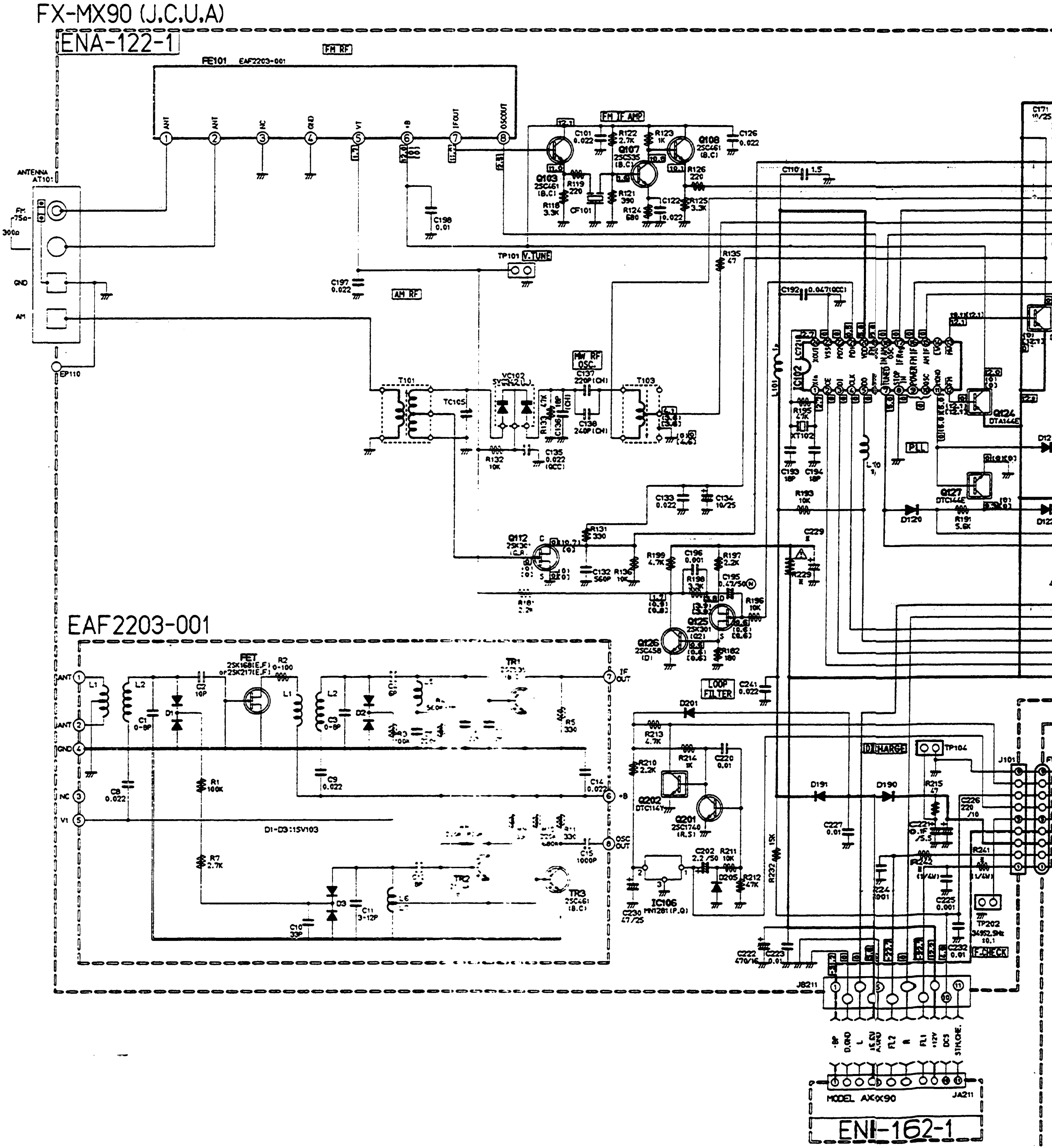
Others

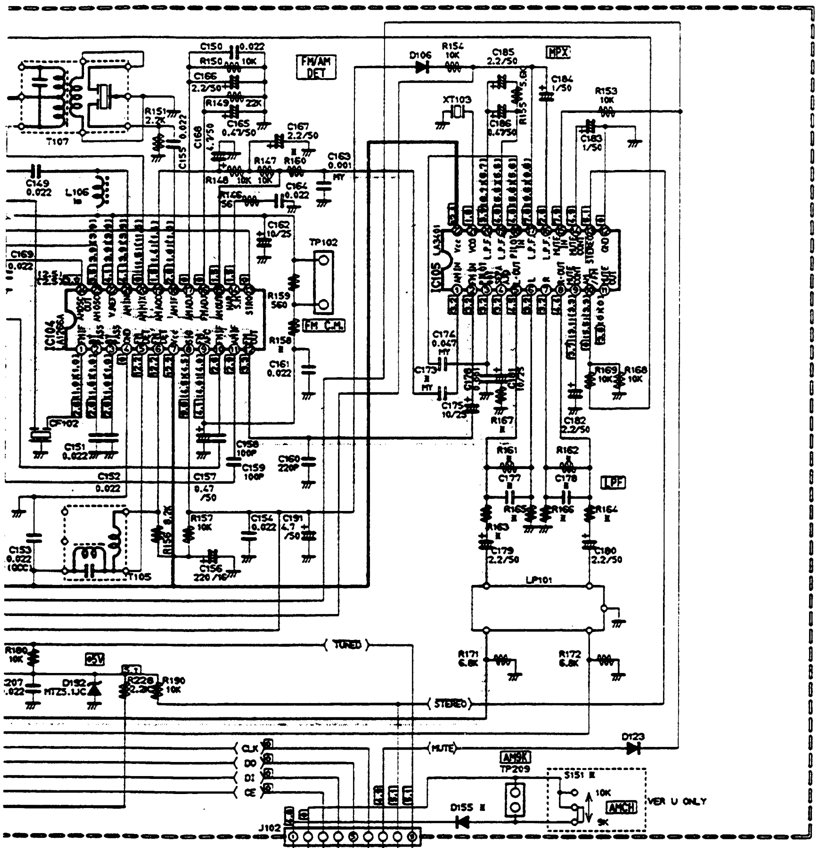
Δ	ITEM	PART NUMBER	DESCRIPTION	AREA
		EMW10002-201	CIRCUIT BOARD	
		E306951-002	FL DISPLAY HOLDER	
		E3400-420	FELT SPACER	
		E70859-001	EARTH PLATE	
	J441	EMV7130-013	CONNECTOR (13PIN)	
	L841	ENZ3001-002	OSCILLATOR COIL	
	P991	EMV7123-024	CONNECTOR (24PIN)	
	P992	EMV7123-024R	CONNECTOR (24PIN)	
	P993	EMV7123-013	CONNECTOR (13PIN)	
	P994	EMV5109-010A	PLUG ASSY (10PIN)	
	S981	ESP0001-018	TACT SWITCH (STOP/CLEAR)	
	S982	ESP0001-018	TACT SWITCH (▶▶|) AUTO SEARCH	
	S983	ESP0001-018	TACT SWITCH (PLAY/PAUSE)	
	S984	ESP0001-018	TACT SWITCH (OPEN/CLOSE)	
	S985	ESP0001-018	TACT SWITCH (DISPLAY)	
	S986	ESP0001-018	TACT SWITCH (A.EDIT)	
	S987	ESP0001-018	TACT SWITCH (|◀◀) AUTO SEARCH	
	S988	ESP0001-018	TACT SWITCH (FADE)	
	S989	ESP0001-018	TACT SWITCH (REPEAT)	
	S990	ESP0001-018	TACT SWITCH (PROGRAM)	
	S991	ESP0001-018	TACT SWITCH (RANDOM)	
	S992	ESP0001-018	TACT SWITCH (AUTO POWER)	
	X841	ECX0086-436EWT	RESONATOR	
	CF991	ECX0004-194KM	RESONATOR	
	FL991	ELU0001-114	FL TUBE	
	FW991	EWR36B-10LST	FLAT WIRE (6PIN)	
	FW992	EWR38B-10LST	FLAT WIRE (8PIN)	
	FW993	EWR37B-10LST	FLAT WIRE (7PIN)	
	FW994	EWR35B-40SST	FLAT WIRE (5PIN)	
	FW995	EWR33B-45SST	FLAT WIRE (3PIN)	
	J8441	EWP902-020	PLUG WIRE ASSY (13PIN)	
	JT991	EMV7122-103	CONNECTOR (3PIN)	
	JT992	EMV7122-103	CONNECTOR (3PIN)	
	JT993	EMV7122-004	CONNECTOR (4PIN)	
	JT994	EMV7122-004	CONNECTOR (4PIN)	
	JT995	EMV7122-103	CONNECTOR (3PIN)	
	JT996	EMV7122-004	CONNECTOR (4PIN)	
	JT997	EMV7122-103	CONNECTOR (3PIN)	

Δ : SAFETY PARTS

— MEMO —

■ Tuner 2


FX-MX90 (J.C.U.A)
ENA-122-1
FE101 EAF2203-001
FM RF
FM IF AMP
ANTENNA AT101
FM 75Ω
300Ω
GND
AM
EP110
ANT
NC
GND
VT
+B
IFOUT
OSCOUT
C101 0.022
R122 2.7K
R123 1K
Q108 2SC461 (B,C)
C126 0.022
Q107 2SC535 (B,C)
Q103 2SC461 (B,C)
R119 220
R118 3.3K
CF101
R121 390
R124 680
C122 0.022
R125 3.3K
R126 220
C110 1.5
C198 0.01
TP101 V.TUNE
C197 0.022
AM RF
R135 47
MW RF OSC
T101
TC105
VC102
C137 220P (CH)
C138 240P (CH)
T103
R132 10K
C135 0.022 (GCC)
C133 0.022
C134 10/25
Q112 2SK30 (G,R)
R131 330
C132 560P
R136 10K
R199 4.7K
C196 0.001
R197 2.2K
R198 3.3K
C195 0.47/50
R196 10K
Q125 2SK301 (Q2)
Q126 2SC458 (D)
R182 180
R229
C229
C192 0.047 (GCC)
IC102
L101
R195 47K
XT102
C193 18P
C194 18P
L110
PLL
Q124 DTA144E
Q127 DTC144E
R193 10K
D120
R191 5.6K
C171 10/25
LOOP FILTER
C241 0.022
EAF2203-001
FET 2SK168 (E,F) or 2SK217 (E,F)
R2 0-100
C2 10P
C1 0-8P
C3 0-8P
L1
L2
D1
D2
D3
TR1
TR2
TR3 2SC461 (B,C)
R5 330
R1 100K
R7 2.7K
C8 0.022
C9 0.022
C14 0.022
C15 1000P
C10 33P
C11 3-12P
L6
D1-D3:1SV103
IF OUT
OSC OUT
D201
R213 4.7K
R210 2.2K
R214 1K
C220 0.01
Q202 DTC114Y
Q201 2SC1740 (R,S)
C202 2.2/50
R211 10K
D205
R212 47K
IC106 MN1281 (P,Q)
C230 47/25
R232 15K
D CHARGE
TP104
D191
D190
R215 47
C227 0.01
C226 220/10
C221 0.1F /5.5
R241
R242
C224 0.001
C225 0.001
TP202 34952.9kHz ±0.1
C232 0.01
F.CHECK
C222 470/16
C223 0.01
J101
JB211
-8P
D.GND
L
S.ON A.ON
FL2
R
FL1
+12V
DC5
STICK.
MODEL AX-X90
JA211
ENI-162-1


FM/AM DET
MPX
T107
L106
IC104
CF102
T105
TP102
FM C.M.
XT103
IC105
LPF
LP101
TUNED
STEREO
MUTE
CLK
DO
DI
CE
AMSK
TP209
S151
AMCH
VER U ONLY
D155
D123
J102

* MARK

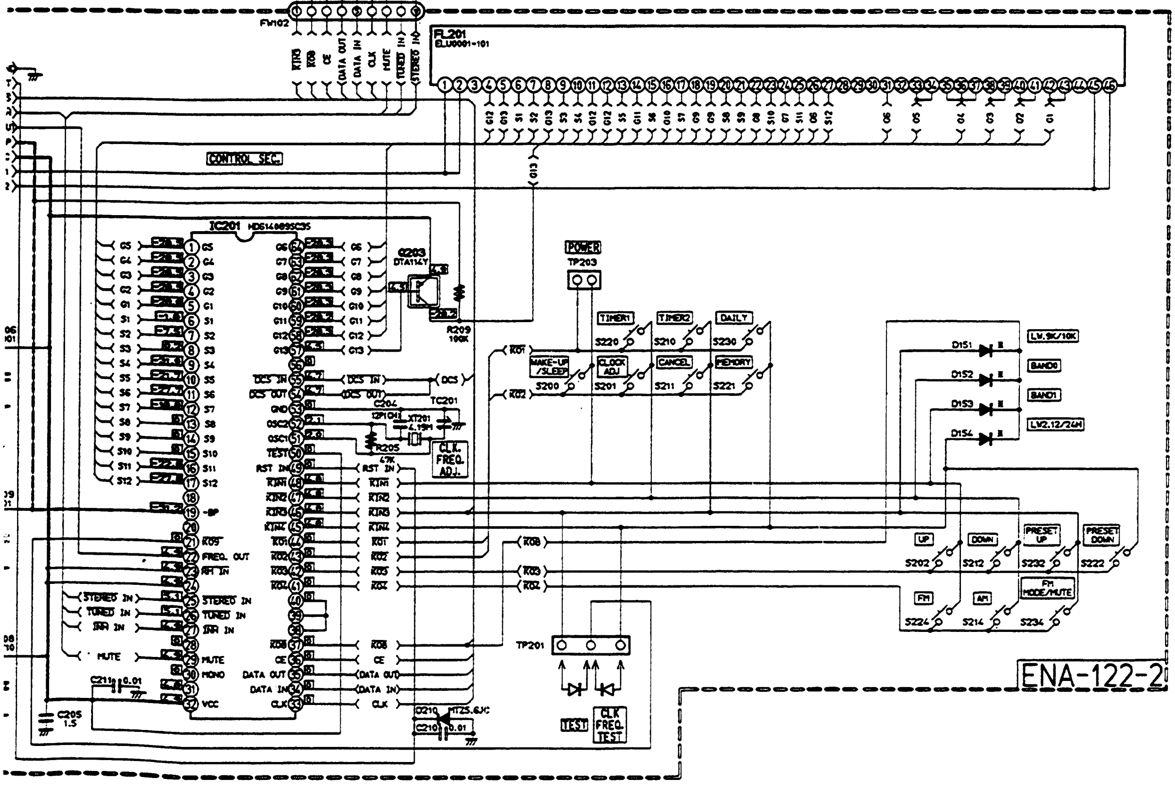
	J.C	U	A
R158	18K	27K	27K
R160	5.6K	5.6K	18K
R161, 162	82K	82K	120K
R163, 164	4.7K	4.7K	3.3K
R165, 166	180K	180K	270K
R167	39K	39K	47K
R241	2.2 UNF.C.	4.7 UNF.F.	0Ω
R242	3.9 UNF.C.	2.7 UNF.C.	4.7 UNF.F.
C173	0.039	0.039	0.022
C177, 178	820P	820P	390P
S151	NONE	USED	NONE
D151	NONE	NONE	USED
D152	USED	NONE	NONE
D153	NONE	USED	NONE
D154	USED	NONE	NONE
D155	NONE	USED	NONE
R229	22(1/4W) UNF.C.	68(1/4W) UNF.F.	68(1/4W) UNF.F.
C229	470/16	220/16	220/16

NO MARK DIODES ARE 1SS133

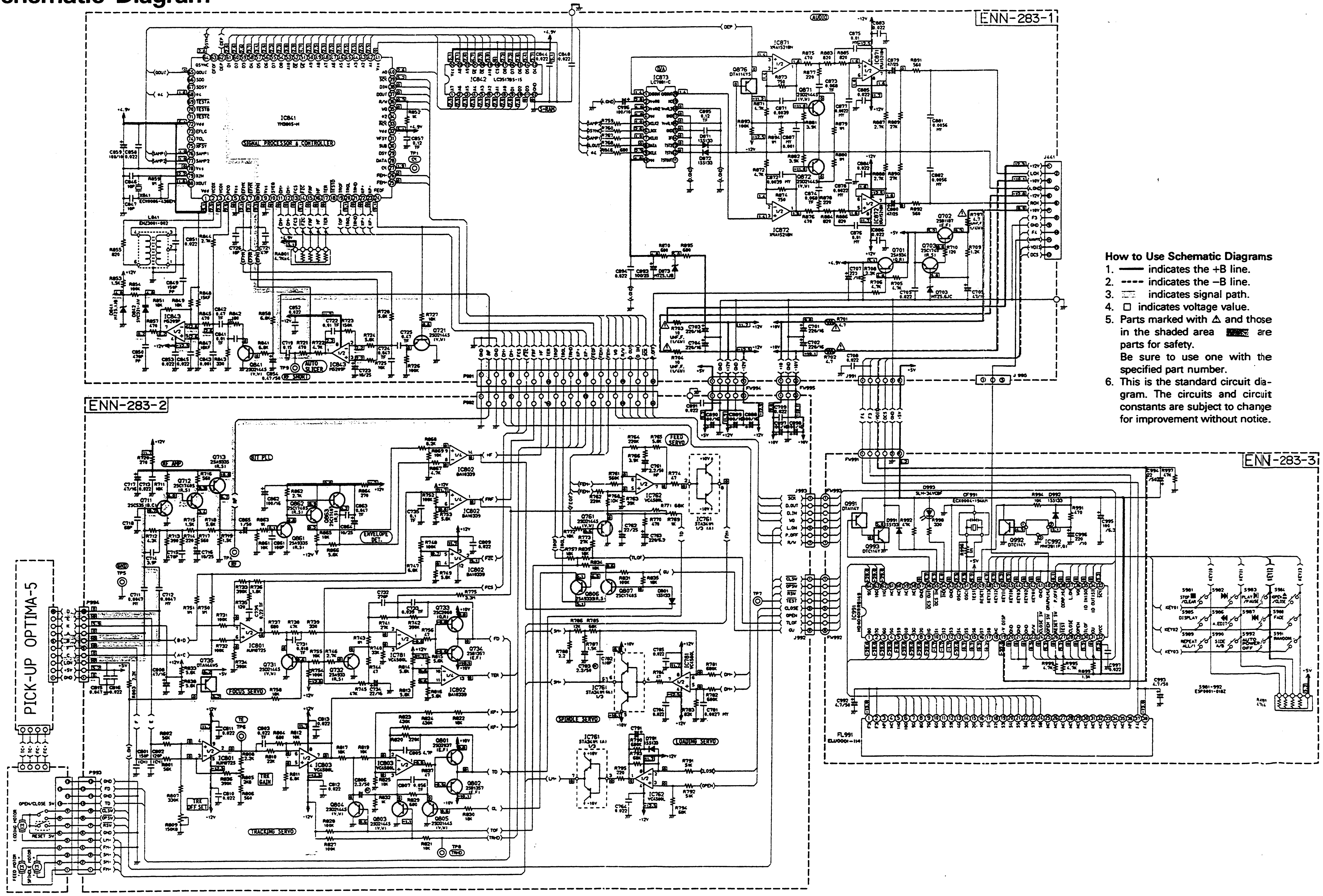
▭	FM AUTO NO SIGNAL	(87.5MHz)
( )	MW NO SIGNAL	(522KHz)
[ ]	LW NO SIGNAL	(144KHz)

How to Use Schematic Diagrams

1. —— indicates the +B line.
2. ---- indicates the −B line.
3. indicates signal path.
4. ▭ indicates voltage value.
5. Parts marked with ⚠ and those in the shaded area ▨ are parts for safety. Be sure to use one with the specified part number.
6. This is the standard circuit diagram. The circuits and circuit constants are subject to change for improvement without notice.


FW102
FL201
CONTROL SEC.
IC201
Q203
POWER
TP203
TIMER1
TIMER2
DAILY
MAKE-UP /SLEEP
CLOCK ADJ
CANCEL
MEMORY
CLK FREQ. ADJ.
D151
D152
D153
D154
LW.9K/10K
BAND0
BAND1
LW2.12/24H
UP
DOWN
PRESET UP
PRESET DOWN
FM
AM
FM MODE/MUTE
TP201
TEST
CLK FREQ. TEST
ENA-122-2

Schematic Diagram


ENN-283-1
ENN-283-2
ENN-283-3
IC841
SIGNAL PROCESSOR & CONTROLLER
IC842 LC3517BS-15
IC843
IC871
IC872
IC873 LC7881-C
AUDIO
D/A
J441
J991
J995
P901
P902
FV994
FV995
FV991
J992
J993
RF AMP
BIT PLL
ENVELOPE DET.
AUTO SLICER
RF SHORT
FEED SERVO
FOCUS SERVO
TRACKING SERVO
SPINDLE SERVO
LOADING SERVO
TRK GAIN
TRK OFF SET
IC801
IC802
IC803
IC761
IC762
IC781
IC991
IC992
CF991
FL991
PICK-UP OPTIMA-5
P993
P994
OPEN/CLOSE SW
RESET SW
LOADING MOTOR
FEED MOTOR
SPINDLE MOTOR
S981 STOP /CLEAR
S982 PLAY /PAUSE
S983 OPEN /CLOSE
S985 DISPLAY
S986 EDIT
S989 REPEAT ALL/1
S990 SIDE A/B
S991 RANDOM
S992 AUTO POWER OFF
S981-992 ESP0001-018Z

How to Use Schematic Diagrams

1. —— indicates the +B line.
2. ---- indicates the −B line.
3. ┅ indicates signal path.
4. □ indicates voltage value.
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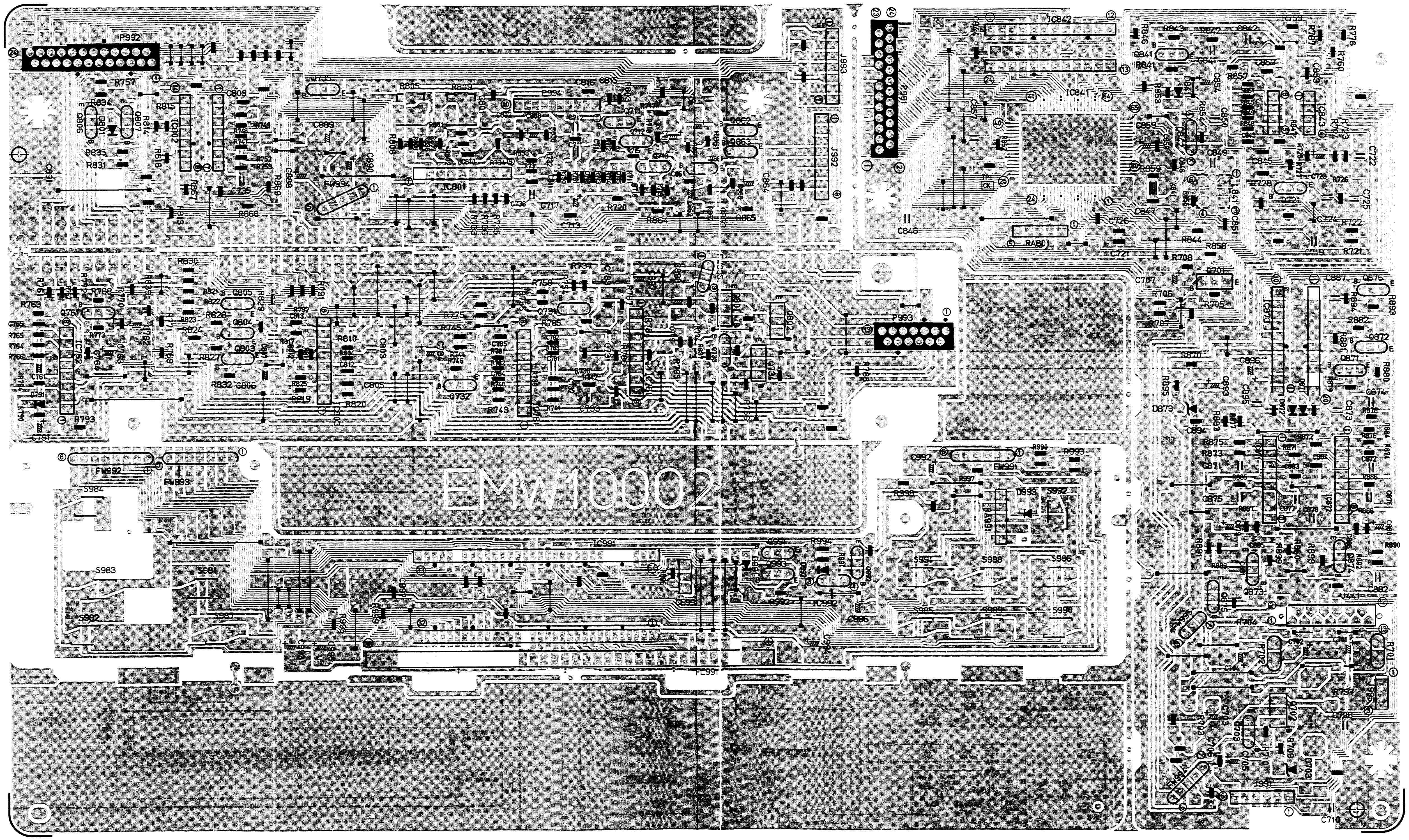
6. This is the standard circuit diagram. The circuits and circuit constants are subject to change for improvement without notice.

Printed Circuit Board


EMW10002
P992
P993
P991
J992
J993
IC801
IC802
IC841
IC842
IC873
IC991
IC992
FW992
FW993
FW994
FL991
RA801
S982
S983
S984
S985
S986
S987
S988
S989
S990
S991
S992
S996